Online Social Networks and Saudi Youth Participation in Physical Activity

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Abstract

Previous studies targeting youth participation in physical activity have argued that self-motivation is the main key to increasing participation. However, few studies have focused specifically on the role of structural factors in prompting youth participation in physical activity. The structure may include people, and institutions that are introducing, providing and facilitating physical activity to youth. Therefore, this study focuses on the role of the structure surrounding youth. The study takes youth in Saudi Arabia aged 15-24 as its subjects in order to examine the use of three online social networks (OSNs), i.e., Facebook, Twitter, and Instagram, for communication and exchange of resources and the influence on participation of key decision makers such as home (parents and siblings), school (Ministry of Education and PE teachers), physical activity and sports clubs (General Authority of Sports [GAS]), and friends. The study uses mixed methods and follows the social network structural theory to examine how the exchange of resources (e.g., information, emotional support, financial support, and facilities and services) takes place between agent and structure. The main findings are that the structure plays a role in influencing participation among Saudi youth. Friends are of great influence, as they occupy the longest hours of youth time both at school, where friends interact in person, and outside of school, where friends communicate through OSNs.

An Islamic and conservative society prevails in Saudi Arabia, where 99 per cent of the population is Muslim. Therefore, in addition to the structural factors noted above, religion is also investigated. Indeed, Islam drives motivation in this large conservative group as individuals learn to obey and implement the religious advice and Islamic teachings of the prophet Mohammed (peace be upon him), including those messages with relation to becoming a healthy and strong Muslim. Finally, the

study also focuses on the participation of Saudi female youth in physical activity. Due to cultural reasons preventing women from participating in physical activity as freely and equally as their male peers in the country, Saudi Arabia has seen an increasing percentage of obese women.

The main aim of this research is to understand the relationship between agency and structure and thereby to identify the role of structure in increasing the participation of youth in physical activity. The research question (How do OSNs facilitate Saudi youth participation in physical activity?) investigates the relationship between agency and structure to delineate the pattern of information exchange regarding resources for involvement in physical activity. Through the use of mixed methods including face-to-face interviews, online survey and digital ethnography, the researcher investigates how youth social networks function both offline and online. The study concludes that decision makers in the field of physical activity participation in Saudi Arabia vary in their level of encouragement, influence and communication. Family members do not seem to communicate with youth via online platforms, but they do play a crucial role in offline social networks. Private institutions are becoming very active in OSNs, and public institutions are following the trend, albeit at a slower pace. The study shows that physical activity facilitators in Saudi Arabia are still failing to effectively reach youth and encourage them to participate in physical activity. Various policies need to be reviewed and enhanced if the public institutions do indeed want to reach more youth and benefit youth and the community, including the female youth, who make up more than half of the population. The study shows that the way to develop these policies is to communicate with youth via OSNs and to provide youth with more facilities, venues and services in the country that are suitable for both genders.

Dedication

I'm grateful I've succeeded in pursuing this thesis, which was one of my dreams. I believe this is because Allah (God) was very generous with me and provided me with patience, support and inspiring family and friends who surrounded me with their love, kindness and knowledge, and with life experiences which made this journey fruitful and worth it. I am thankful and honoured to dedicate my humble work to my family and friends, to my participants, to youth and to everyone else who helped me accomplish it.

Acknowledgment

Taking a PhD in sport sciences was a dream come true, especially as men dominate this field in my country. I can still hear the voices of the people who tried to change my mind and shift my interest from this field due to many cultural reasons, which I respect and understand. To be honest, I am thankful for these people because I know they care about me and they encouraged me to push my borders and dedicate myself to prove that what I could benefit youth of both sexes in my country, and that I could do all this as a Saudi woman.

I consider myself fortunate to have been born into a sporty family and to be inspired by the first sportsman in my life, my father Abdulmajeed, and by my uncles, who enthused me with their journey in the world of football as captains of the Al-Ittihad football club one after the other from the late 1970s to the late 1980s. The best thing I've learned from them, besides being skilled at their hobby, was how to stay modest. I learned this by watching not only what they offered, but also how they offered it. I view these men with great respect and appreciation. They became sportsmen who succeeded in sports at the top level, and they earned their education and developed their careers. In short, they accomplished a set of achievements we don't often see nowadays. I wanted to follow in their footsteps by taking my interest in sports and physical activity to a higher level and by combining my working experience as a sports and cultural journalist with an academic degree to confirm my position as a physical activity participation specialist.

Thanks to my beloved parents, supporting husband and family. Thanks to my best friends and all the participants of this research.

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Keywords: Physical activity, participation, youth, online social networks, agent, structure, moderators, exchange of resources, institutions, women, Saudi Arabia.

Key abbreviations: Online Social Networks (OSNs), General Authority of Sports (GAS), Ministry of Health (MOH), Ministry of Education (MOE), Commission of Promotion of Virtue and Prevention of Vice (CPVPV), World Health Organization (WHO).

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Chapter One: Introduction

1.1 Introduction

This chapter introduces the research topic, the rationale behind the research question (How do OSNs facilitate Saudi youth participation in physical activity?), the study's contribution to existing knowledge, the objectives and the strategy employed, and the findings.

I am fortunate to have a media background, having worked since 2005 as a sport and social journalist at two leading Saudi Arabian newspapers: the *Arab News Newspaper* and the *Saudi Gazette*. My passion for sports inspired me to specialise in athletics and physical activity in addition to covering cultural and social news. After about five years of practical work, I felt something was missing, so I decided to enhance my knowledge in the field through investigating this field theory. There was a limit to what I could write and explain with empirical data, because there are few academic programmes about sports in Saudi Arabia. I decided to pursue postgraduate studies with an MA in international journalism and a focus on sports to help me understand the field more deeply and from a different perspective. For my research project, I chose to focus on society's role in women's participation as amateurs, athletes and sports journalists in physical activities and sports. This topic was inspired by my personal experiences as a sport journalist and as a woman in a country where physical activity for women is not as accessible or accepted as it is for men. The results of my MA study showed that a large number of women in the Arab world (22 countries) and Saudi Arabia in particular face discrimination when seeking to participate in physical activities and sports. The results also revealed the connection between lifestyle changes and use of technology, showing that the Internet is opening

doors to greater opportunities for physical activity and physical education awareness, particularly through online sports forums and, in turn, online social networks (OSNs) such as Facebook and Twitter. The interest in online sports forums is significant for both sexes, but particularly for women, who can engage anonymously, learn and share their views without fear of cultural conservativeness. During 2010, many Saudi women participated online with fake names and without the consent or knowledge of their parents or legal guardians (each Saudi woman is supported by her closest male relative, who holds the primary responsibility for the woman until she reaches age 35, at which point she is expected to have progressed from education and work to marriage). The conservatism of Saudi Arabia and many neighbouring Arab countries opposes female athletic participation, leading to inactivity and a subsequent increase in female obesity and physical illness.

In addition to these findings, health institutions released increasing statistics about health risks among the Saudi population. The United Nations Conference on Trade and Development's (UNCTD) report published in 2012 showed a 40% prevalence of diabetes for people over 30 and predicted that by 2030, diabetes will affect more than 16% of the adult population in Qatar and Kuwait, 17% in Bahrain and Saudi Arabia and 19% in the United Arab Emirates. Prevalence rates vary between genders, but these differences are not statistically significant across the region. A Saudi Arabian diabetes clinic implemented a multi-disciplinary approach to diabetes management, focusing on young people (ages 14–20) with Type 1 diabetes who had previously received inadequate help. This study revealed that the percentage of Saudi men and women with HbA1c levels above 10% fell significantly over three years, indicative of a marked decrease in the development of future complications (UNCTD, 2012).

The latest World Health Organization (WHO) report in 2014 stated that the lowest levels of physical activity are in Saudi Arabia and Kuwait, where more than 60% of adults are classified as insufficiently active. The report also stated that only Saudi Arabia has undertaken the STEPS survey which targets chronic diseases and health promotion on more than one occasion (2005 and 2013). Other national surveys and studies provide additional data on athletic participation among adults and young people in Saudi Arabia, including the Arab Teen Lifestyle Survey (ATLS) and the Coronary Artery Disease study. The Alharaka Baraka programme, which encouraged children to take care of their health, is another major response to the alarming health risks among inactive youth.

As I neared graduation, I was keen to investigate this topic and better understand the influence of society and culture on youth (15 to 24 years old), specifically regarding physical activity in Saudi Arabia. To do this, I focused on the structural factors in physical activity participation among youth, including home and parents, schools and the Ministry of Education (MOE), physical activity clubs and the General Presidency of Youth Welfare (GAS), friends and OSNs such as Facebook, Twitter and Instagram, based on recommendations from studies conducted in countries with advanced investigations of this topic (e.g., UK, USA). The present study's main subject of interest is youth. Therefore the study investigates the relationship and means of communication between youth and their social structure, from the micro level – at which their parents play the primary role in their individual network –to the macro level, where society's various structures, decision makers and institutions play major roles.

In addition, because the country's family-oriented religious, cultural and structural conditions encourage group and network socialisation, this study uses social

structural theory (Stokowski, 1994; Forse & Degenne, 1994) to understand the social network surrounding the youth. Social structural theory argues that societal structures play a role in influencing the individual through various mediators. This study focuses on family, friends, peers, public and private institutions facilitating physical activity participation for such schools (MOE), the Saudi Arabian GAS and OSNs.

Throughout the study I will refer to the structure as; decision makers, institutions, and physical activity activists in OSNs depending on the role they play. Parents and senior officials in governmental and private institutions for examples will be referred to as decision makers because they have the right to decide and provide, or ban youth from participating in physical activity in the country. Physical activity activists in OSNs will be referred to as facilitators because they tend to facilitate youth participation in physical activities through linking and guiding youth to opportunities, and venues in the country where they get the chance to participate and take part in physical activities they did not know about.

Empirical data was collected through semi-structured interviews with youth in Saudi Arabia, with physical activity decision makers in Saudi Arabia and with parents accessible via the Saudi School Sports Strategy Project, and through observations of women's participation in physical activity via OSNs. In addition, an online survey for youth was disseminated across Saudi Arabia through OSNs such as Facebook, Twitter and Instagram. Data was collected through visits to Saudi Arabia from 2013 to 2014 to both Jeddah and Riyadh. NVivo data analysis software was used to analyse the data based on social network structural elements in order to code and arrange the data in proper themes.

The focus of the study is to examine the exchange of resources between the young people (15 to 24 years) who make up the majority of the country's population, and the decision makers who influence and shape the participation of these youth. Lack of physical activity among youth is a worldwide problem resulting in many health risks and is caused by several factors. Some researchers attribute the lack of physical activity mainly to self-efficacy and self-motivation, but others believe that structure plays a crucial role. This study investigates the role of structure for several reasons. First, Saudi Arabia has a family-oriented culture, implying that families play a significant role in encouraging or discouraging participation among youth. Second, Saudi Arabia is a religious country operating under Islamic Sharia law. Islam is practiced by almost 99% of the population and is another influential structure. Third, since youth are up to date with technology and Saudis are considered the most interactive society in the Middle East, the role of OSNs is another important structure to investigate. In addition, according to the previous studies on the role of structure, as is discussed in later chapters, friends and institutions play an important role in influencing youth's physical activity participation and they will be studied here too to understand their role in the Saudi society, hence making five categories.

The following chapters explain the theory's implications further, as the literature review examines how youth participate in physical activity, the role of moderators and the ways in which moderators develop relationships with youth and thereby prompt (or fail to prompt) youth to participate in physical activities. In the second and third chapters, I synthesise previous studies on the topic. The second chapter explains how lifestyle is changing youth socialisation, shifting socialisation from offline interactions where people meet face-to-face, to online platforms where youth can meet through virtual social networks. The third chapter explains the role of

OSNs, such as Twitter, in exchanging resources (e.g., information, facilities, venues, services). The fourth chapter explains the methodology used to investigate the research question. The fifth chapter reveals the findings of the investigation of on and offline platforms. The sixth chapter analyses and discusses the findings of the study and compares them to previous literature. The final chapter summarises my study and findings and explains the study's implication, limitations and recommendations.

1.2 Key knowledge in the field of physical activity participation

Prior to this study, most investigations examined the relationship between agency and structure with the assumption that individuals participate in physical activity because of inner motivation (self-efficacy). Little discussion of the role of social structure in physical activity participation took place. The majority of systematic reviews conducted from 2000 to 2015 that focused on the relationship between agent and structure with an emphasis on participation in physical activity were in English, usually focusing on the Western world; studies in Arabic that focus on Arabic culture and society were very rare.

In addition, few studies discussed the influence of religion as a structure and moderator in influencing youth to participate in physical activity. The majority of studies were not longitudinal. The first physical activity strategy in Saudi Arabia (entitled the 'National School Sports Strategy', (NSSS)) was implemented in September 2012, and was carried out with the cooperation of the Saudi Arabian Ministry of Education, the Ministry of Health, and the General Presidency of Youth Welfare. A limited number of studies have investigated physical activity and youth as they relate to OSNs.

Recent work on computer-mediated communication (CMC) suggests that changing social interactions from face-to-face to text-based media creates an

impoverished communication environment, fraught with misunderstandings and antisocial behaviour (Short et al., 1976; Sproull & Kiesler, 1986, 1991; Culnan & Markus, 1987; Lea, 1992). However, as new types of media have become more popular in common and group conventions (Poole & DeSanctis, 1990; McLaughlin et al., 1995), they have come to function as vital means of maintaining work and social connections in everyday life (Wellman & Haythornthwaite, 2002), crossing the social worlds of work, home and geography (Haythornthwaite & Kazmer, 2002; Salaff, 2002; Haythornthwaite & Hagar, forthcoming). In addition, the Internet has been blamed for disconnecting people from family interactions, drawing them into online relationships with people of unknown and unconfirmed identity (Kraut et al., 1998; Nie, 2001), an idea that is being discussed in many cultures, including Saudi Arabia. Such ideas are countered by those who see the Internet as an opportunity for retaining connections with family and friends when away at school (LaRose et al., 2001) or after moving to a new neighbourhood (Hampton & Wellman 2002). Many researchers recognise the usefulness of CMC for making connections with distant people who have similar interests and satisfying needs not met locally (Culnan and Marcus, 1987; Rheingold, 1993, 2003; Jones, 1995; Constant et al., 1996; Wellman et al., 1996), and many have written about how online contact can lead to face-to-face contact as relationships deepen (e.g. Rheingold, 1993; Kendall, 2002). These differing opinions of CMC and Internet connectivity generate significant discussions, yet few studies examine how such connectivity can be both disengaging and engaging, disruptive of relationships yet also integrative across populations.

The social network perspective emphasises the importance of exchanges that support both work and social processes (Garton et al., 1997; Berkowitz & Wellman, 1997; Wasserman & Faust, 1994). This type of exchange or interaction is known as a

social network relation, and pairs that maintain one or more types of relations are said to maintain a tie. Across a set of individuals, person-to-person connectivity builds into social networks. Such networks reveal how resources flow and circulate among these individuals, and what subsets or cliques of individuals are more connected than others. The ties maintained by pairs can range from weak to strong according to the types of exchanges, frequency of contact, intimacy and duration of the relationship.

1.3 Contribution of knowledge

The study has contributed to knowledge in three ways including theoretical implications, methodological contribution, and policy/practical implications.

Theoretical implications: Since Saudi youth participation in physical activity has not been investigated before through various structures and through comparing and combining the point of view of both youth and the decision makers in the country, the social network structural theory helped in understanding the participation in physical activity from the micro to the macro level for both genders. For example, using the theory showed the big difference in communication and exchange of resources between male online social networks, and females in online social networks. While the first tend to be more active and open, the latter have more restrictions and limitations. As many structures were investigated together the strength of ties were more visible between youth and physical activity activists because they were offering information without seeking something in return, and offered two-way communication. However, the ties were weaker with organisations that offered promotional information to attract customers, and decision makers who wanted one-way communication.

Additionally, the theory helped reveal new information about the role of female participation, religion, culture, and extended families, which was not revealed before and did not exist extensively. Religion for example, was not considered as a structural factor but because the country rules by the Islamic Sharia law it showed the power religion holds over the participation of youth in physical activity. This was important because it encourages youth and shapes their daily lifestyle's actions and behaviour, as well as their other structures.

The theory also shows how tradition and culture have an additional strong role as it strengthens and weakens ties between youth and decision makers who exchange resources regularly to promote physical activity. This strengthening and weakening pattern delivered the development and progress of how youth (including females) now have a variety of options to participate in physical activity. Youth now consider online social networks as their gate when seeking information or participation in physical activity. Decision makers too are now aware of its importance and hence use it to facilitate and promote physical activity participation among youth. Last but not least, since the theory was chosen to meet the family oriented nature as it investigates the important role of family (parents, and siblings), and where the role of the extended family (e.g., cousins), appeared for the first time to be almost as important as the immediate family's role.

Methodological contribution: Previous researchers in the field in Saudi suggested that paper surveys were not always valid and it was hard to interview females face-to-face due to cultural restrictions. Therefore, I chose mixed methods (e.g. face-to-face, online survey, and the digital ethnography), which allowed me to gather new information for the first time in this field in Saudi. And because I chose to investigate

both online and offline social networks this revealed that what youth or the decision makers say is not always what they do or offer while exchanging resources. The mixed methods findings showed differences (e.g. the face-to-face findings, online survey, and the digital ethnography findings). To be able to understand better youth participation in physical activity an intensive longitude digital ethnography for the hashtags related to physical activity in Saudi in Arabic is suggested. To be able to monitor the number of participants in each hashtag, (e.g. age group, province, suggestions) would help in filling the gap and meeting youth requirements and the need to increase their participation and awareness accordingly.

Practical/policy implications: The study shows that there is a need for (i) developing policies and strategies that encourage the use of online technologies for promoting PA; (ii) sport organisations also need to embrace the advantages of new technologies for better understanding the physical activity behaviour of young people. Therefore, the study confirms the important role of the decision makers in providing and facilitating physical activity participation in Saudi, yet highlights the gap where some structures such as the governmental institutions need to be more present and acknowledge the role of the physical activity activists in OSNs and work together with all the structures that surround youth. It also delivers the limitations in each structure, and encourages cooperation between the various structures surrounding youth to deliver prosperous and sustainable motivation for youth to participate in physical activity. It also widens the understanding of the social responsibility of different structures towards youth participation in physical activity and sheds light on the lack of value of athletes in society, as well as physical education teachers, which need collective cooperation again from the different structures to enhance their

standing in society. This must be addressed from the top to the bottom of the network hierarchy of youth.

School-based interventions in the Western world have shown greater positive results than in any other setting in influencing youth to participate in physical activity. An exploratory visit to the Arab world, specifically Saudi Arabia, shows that religion and parents have similarly impactful influences in that region. School-based intervention is limited to private schools, international schools for both genders and male public schools. This indicates that women in public schools do not share similar opportunities for physical activity participation. This study also reveals that socioeconomics plays a role in increasing participation by boosting an awareness and education of physical activity among parents. Only a few studies have focused on youth aged 15 to 24; the majority have concentrated on children, including studies on Saudi Arabian youth lifestyle (Al-Hazzaa, 2011).

Studies also tend to relate participation in physical activity with health or socioeconomic factors. There are few studies on the role of technology, particularly as it relates to OSNs, in relation to physical activity participation; hence the importance of this study. Similar studies were not available in regards to Saudi populations specifically. Previous studies also suggest that participation in physical activity tends to be based on enjoyment, something experienced by youth who use technology and therefore, this encourages utilising technology to motivate youth to participate in physical activity through enjoyment. All previous suggestions from literature shape and deliver the objectives of this study, as will be explained in the next section.

1.4 Research objectives

Since this study focuses on the relationship between agency and structure, the social network structural theory introduced by Stokowski (1994) delivers the objectives of this study as follows: First, to understand the relationships and exchanges taking place within young people's online networks that promote physical activity; Second, to analyse patterns in the transformation of offline to online social networks through technology and their effects on physical activity participation; Third, to examine how different structural factors and the patterns those factors create operate while influencing youth to participate in physical activity through offline social networks compared to OSNs.

1.5 Research strategy and findings

To meet the objectives listed in the previous section, this study strategy follows an interpretive perspective (Creswell, 2011) and Giddens (1979, 1984, 1993) theory to examine the relationship between structure and agency. This study also uses a combination of qualitative and quantitative methods, including semi-structured interviews, an online survey and digital ethnography for all the structures and institutions responsible for facilitating youth participation in physical activity in Saudi Arabia.

This study's findings show that structural relations play a significant role in shaping youth participation in physical activity and influencing the health behaviours of young people. The findings also show that mediators tend to change roles from being a structure to being a mediator according to the time spent by youth in/with each structure. The level of influence seems to change accordingly. Each mediator or structure tends to enforce different values according to its own agenda. The communication wall between sport officials and youth was replaced with a

transparent medium through the OSNs, which created a trustworthy source of information on physical activity for youth. These platforms allowed Internet-assisted communication to become a strong mediator and structure due to its connecting ability. At the same time, the Saudi GAS and schools show increasing attention to OSNs, yet there is a need for an investigation to study the relationship in this structure surrounding youth.

1.6 Note on the situation in Saudi and physical activity vision

The rapid changes happening in Saudi Arabia show that the wheel is moving forward and decision- and policy-makers are taking serious actions to fulfil the grandiosely named "Vision 2030," as described recently by Prince Mohammed ibn Salman, the deputy crown prince. The Vision is important because of the reshuffle and restructuring of ministries and ministers included in the field of physical activity and institutions affecting youth physical activity participation in the country. The Vision includes increasing the percentage of participation in physical activity from 13% to 40% over the next five years, and encourages individuals to participate in physical activity at least once a week. According to Vision 2030, the national programme is designed to enhance the quality of cultural activities and entertainment, and financial support will be offered to open dedicated venues showcasing Saudi talent. The programme will create a national network of clubs, encourage the exchange of knowledge and international experiences and promote hobbies and leisure activities. It also promises to review regulations to simplify the establishment and registration of amateur, social and cultural clubs. The goal dictates that by 2020 there should be more than 450 registered professional and amateur clubs providing a variety of cultural activities and entertainment for citizens.

Meanwhile, the GAS's name was changed this year to the General Commission for Sports (GCS) with the re-appointment of Prince Abdullah ibn Musaed as the country's fourth president in May 2016 (although he was officially appointed president in 2014 when he was 49 years old). The first president of the GAS was Prince Faisal ibn Fahd, who was appointed at the age of 30 and in office from 1971 to 1999. He supported physical activity and inaugurated the first official national football team, was chairman of the sports federation for Islamic solidarity due to the importance of the role of religion in the country, served as chairman of the international committee for the preservation of the legacy of Islamic civilisation and, just before his death, chaired the Kingdom's supreme committee for the merit in literature prize, which still encourages youth to study and investigate the field of sports sciences. The presidency then was passed to his 48-year-old brother Prince Sultan ibn Fahd, who was in charge from 1999 until his resignation in 2011; he was also president of the Saudi Arabian Olympic Committee. His nephew Prince Nawwaf ibn Faisal took over at the age of 33 and resigned in 2014, and was also the president of the Saudi Arabian National Olympic Committee. Despite his brief presidency, Prince Nawwaf witnessed the greatest development in communication with youth both offline and via OSNs, as he became a very active communicator and one of the most followed leaders on OSNs such as Twitter. He believed in bridging the gap between youth and officials and encouraged his employees to follow his example. All four presidents supported physical activity for youth with special dedication to the role of religion through such measures as the Islamic Solidarity Games. The third presidency supported women's participation for the first time when two women competed in the 2012 London Olympics; it also witnessed the first royal decree appointment of a Saudi woman, Arwa Mutabagani, as an official member of the Saudi

Arabian Equestrian Federation in April 2008. Another royal decree was issued in March 2016 to appoint Princess Reema bint Bandar Al Saud, Director of Women's Sports at the GAS, who is a staunch supporter of women's physical activity and the owner of the Yibreen Spa, a woman's health and fitness club in Riyadh. Technology was also important during the third presidency and continued as both Prince Nawwaf and Prince Abdullah ibn Musaed promoted physical activity through their OSN accounts.

Additional attempts to support youth lifestyle and activities included a royal decree to create a new Commission for Recreation and Culture (CRC) in 2016. The Commission of Promotion of Virtue and Prevention of Vice (CPVPV) was inaugurated in 1940 and then restructured and upgraded to a ministry in 2016; this change limits the CPVPV's authority as the religious police of the country and controls their actions, as they no longer have the right to interrogate or capture people and can only report suspects to the police or the National Committee for Narcotics Control (NCNC). The CPVPV used to create many obstacles for youth and especially for young women who wanted to participate in physical activity, but the new changes provide lenience as long as the activity does not contradict with the religion, tradition or culture. Despite limited opportunities for the private sector to support the public sector, these institutions are now working together through the OSNs to encourage physical activity participation by increasing the number of health and fitness clubs in the country for both genders. The institutions are also supporting social networking physical activity activists emotionally and financially in their journey to raise awareness through exchanging information and creating physical activities for youth.

Meanwhile, the following quotes indicate the view of the Council of Ministers and the country's new vision with reference to the importance of the lifestyle of

youth, culture and religion and were expressed by Prince Mohammed ibn Salman, deputy crown prince and Chairman of the Council of Economic and Development Affairs in the country's Vision 2013, which was resealed in April 2016,

> More than half of the Saudi population is below the age of 25 years. We will take advantage of this demographic dividend by harnessing our youth's energy and by expanding entrepreneurship and enterprise opportunities… We consider culture and entertainment indispensable to our quality of life. We are well aware that the cultural and entertainment opportunities currently available do not reflect the rising aspirations of our citizens and residents, nor are they in harmony with our prosperous economy. It is why we will support the efforts of regions, governorates, non-profit and private sectors to organise cultural events. We intend to enhance the role of government funds, while also attracting local and international investors, creating partnerships with international entertainment corporations. Land suitable for cultural and entertainment projects will be provided and talented writers, authors and directors will be carefully supported. We will seek to offer a variety of cultural venues — such as libraries, arts and museums — as well as entertainment possibilities to suit tastes and preferences. These projects will also contribute to our economy and will result in the creation of many job opportunities.

And with regard to youth and PA participation he said,

> A healthy and balanced lifestyle is an essential mainstay of a high quality of life. Yet opportunities for the regular practice of sports have often been limited. This will change. We intend to encourage widespread and regular participation in sports and athletic activities, working in partnership with the private sector to establish additional dedicated facilities and programs. This

> will enable citizens and residents to engage in a wide variety of sports and leisure pursuits. We aspire to excel in sport and be among the leaders in selected sports regionally and globally. (Prince Mohammed ibn Salman, deputy crown prince and Chairman of the Council of Economic and Development Affairs in the country's Vision 2013, which was resealed in April 2016).

These quotes indicate future interest in promoting physical activity participation in the country from the top of the ladder where decision makers are in charge and this makes it very promising for youth and the country.

Chapter Two: Literature Review – Physical Activity Participation

2.1 Introduction

This chapter investigates three fields. First, previous and recent literature on the physical activity participation of youth is examined through synthesising systematic reviews on youth and factors influencing participation. Second, the social network structure theory is defined and the role of the moderators and decision makers in encouraging or discouraging physical activity participation through the agent and structure exchange of resources is outlined. The gaps in this field are also identified. This section helps in identifying the leading influential structural factors and moderators from the micro level starting with family, friends, private and governmental institutions, and finally moves to the macro level where technology and online networks transform social connections more broadly.

In addition to the previous role of tangible structures, this section also includes a discussion of the role of an intangible moderator, i.e., religion. Saudi Arabia is an Islamic country and religion tends to be an important mediator influencing the actions, behaviour and motivation of youth and is hence being investigated as one of the crucial structural factors. Third, and most importantly, a discussion of the role of online social networks (OSNs) takes place. OSNs are becoming an extension of offline networks for youth, and they provide a new platform for decision makers in the field of physical activity participation to exchange resources and encourage or discourage youth participation.

2.2 Physical activity participation among Saudi youth - Agency versus structure debate

Before getting into the literature about physical activity participation it is important to explain how physical activity participation is being investigated in this study. To begin with we need to understand what creates physical activity participation. Is it the will to participate, in other words, coming from the individual (agency), or is it the structure surrounding an individual and what they provide and how they communicate it?

The notion of agency generally refers to the willed actions and or the capacity of individuals to act independently to make their own free choices (Ritzer, 2008; Ritzer & Gindoff, 1994). Structure refers to all those factors that limit humans' ability to act as autonomous agents. These include social class, education, religion, gender, ethnicity, customs, norms, geography, weather, and much more, including basic biological and genetic factors. Cockerham (2005, p.55) explains further the differences and suggests while agency refers to the capacity to choose behaviour, structure pertains to regularities in social interaction (e.g., institutions, roles), systematic social relationships (e.g., group affiliations, class and other forms of social stratification), and resources that script behaviour to go in particular directions as opposed to others that might be taken. Therefore, the term social structure, which is the focus of this study, may also be used, as Elder-Vass (2010), for example, explains to refer to normative institutions, organisations, class, gender, the capitalist system or demographic distributions, and this helped in choosing the structures in this study. Consequently, Cockerham's (2005, p.56) explanation supports the investigation of this study as he claims that health lifestyles and physical activities participation are not the uncoordinated behaviours of disconnected individuals, but are personal routines that merge into an aggregate form representative of specific groups and

classes, and that is why we need to analyse the structure alongside the individual to understand why youth participate or not in physical activities. This is why we tend to use the agency and structure argument not only to understand the benefits, but also because these benefits represent value created by institutions, and when they communicate these benefits in a certain way to youth they set values and accordingly condition agency which help youth participate in physical activity.

The agency and structure debate was investigated by researchers who would support the importance and the influence of one over the other (agency/structure), and its relevance to their study. This debate that supports different points of view may be understood as an issue of socialization against free will in determining whether an individual acts as a free agent or in a manner dictated by social structure. Lopez and Scott (2000) explain the main feature of a social structure is that it is strikingly nebulous and diverse which means the form of it will continue to change, as well as its effect depending on different factors and settings. This section therefore points out the major topics affecting the agency and structure debate such as feminist theories, religion, and transformation of structures through time and from one setting/platform to another such as; offline and online social networks due to the role of technology and computer mediated communication which is part of this study as will be explained in the following chapters.

Karl Marx in his early writings pointed out “It is not the consciousness of men that determines their being, but, on the contrary, their social being that determines their consciousness,” (Marx, 1978 (1859:4). He was one of the early researchers to discuss the agency-structure theory from a socialist/economic point of view. Since then his

theory created a central debate between theorists committed to the methodological holism and those committed to methodological individualism, and each group defended their views accordingly.

The first belief which supports the idea that actors are socialised and embedded into social structures and institutions that constrain, or enable, and generally shape the individuals' dispositions towards, and capacities for, action, and that this social structure should be taken as primary and most significant (Bandura, 1997; Kaewthummanukul & Brown, 2006; Rovniak, Anderson, Winett, & Stephens, 2002; Sharma & Sargent, 2005). The second belief supports the idea that actors are the central theoretical and ontological elements in social systems, and social structure is an epiphenomenon, a result and consequence of the actions and activities of interacting individuals (Simmel, 1900, 1971; Norbert and Elias, 1987, 1990; Parsons, 1930; Bourdieu, 1972; Berger, Luckmann, 1966; Weber, 1993; and Giddens, 1986, and Cockerham, 2005).

The most influential attempts to combine the concept of social structure with agency have been by Anthony Giddens' theory of structuration (1986), Pierre Bourdieu's practice theory (1972), and Stokowski's structuralist theory of leisure (1994).

Giddens' most related claim in the field was the duality of structure and agency, in the sense that structures and agency cannot be conceived apart from one another. This permits him to argue that structures are neither independent of actors nor determining of their behaviour, but rather sets of rules and competencies on which actors draw, and which, in the aggregate, they reproduce. "Social structures are both constituted by

human agency, and yet at the same time are the very medium of this constitution," Giddens, (1976a, p. 161).

Giddens' developed "Structuration Theory" (1984) as he presented an advanced attempt to move beyond the dualism of structure and agency and argued for the "duality of structure" - where social structure is both the medium and the outcome of social action, and agents and structures as mutually constitutive entities with ‘equal ontological status," (Jary & Jary, 1991, p. 664.) For Giddens, an agent's common interaction with structure, as a system of norms, is described as "structuration".

Bourdieu, on the other hand, investigates the habitus, field, and capital. He explains that an agent is socialized in a "field", an evolving set of roles and relationships in a social domain, while various forms of "capital" such as prestige or financial resources are at stake. He argues as the agent accommodates to his or her roles and relationships in the context of his or her position in the field, the agent internalises relationships and expectations for operating in that domain. These internalised relationships and habitual expectations and relationships form, over time, the habitus. Bourdieu explains that since all those who share a given social position are exposed to the same opportunities and necessities, they tend to develop a similar habitus. Hence, their social practices tend to be objectively harmonized without any calculation or conscious references to a norm and mutually adjusted in the absence of any direct interaction or a fortiori, explicit co-ordination (Bourdieu, 1990b, p.58-9).

Meanwhile, Emirbayer and Mische (1998, p.1004) argued that although agency theorists maintain that agency will never be completely determined by structure, it is

also clear that "there is no hypothetical moment in which agency actually gets 'free' of structure; it is not, in other words, some pure Kantian transcendental free will."

This encourages recent researchers such as Cockerham (2005) to continue the investigation, and who have acknowledged the need for investigating the agency-structure debate as a framework to construct a health lifestyle theory and argued that no such theory currently exists. He defined health lifestyles as collective patterns of health-related behaviour based on choices from options available to people according to their life chances (Cockerham 2000a).

Cockerham (2005) further argued there is a need for a health lifestyle theory that is underscored by the fact that many daily lifestyle practices involve considerations of health outcomes whereas people may have more or less taken their health for granted in previous historical eras, which is presently not the case. Health in late modernity has become viewed as an achievement, something people are supposed to work at to enhance their quality of life or risk chronic illness and premature death if they do not (Clarke et al., 2003).

According to Giddens (1991) and Turner (1992), lifestyle options have become integrated with bodily regimens in late modernity and people have become more responsible for both the health and design of their own bodies. This idea was progressed by Cockerham (2005) who explained various structural factors "empirical studies show that variables such as age, gender, and race/ethnicity influence health lifestyles". He explained, for example, age affects health lifestyles because people tend to take better care of their health as they grow older by being more careful about

the food they eat, resting and relaxing more, and either reducing or abstaining from alcohol use and smoking (Backett and Davison 1995). He also explains, class can also intersect with age to produce further differences. Youth from lower social strata, for instance, smoke significantly more than their higher strata counterparts (Jarvis and Wardle 1999). Low income elderly, in turn, have been found to make negative changes in their food habits or to disregard their diet in response to a negatively anticipated future, while older people with sufficient incomes tend to make positive changes to their diet as they age (Shifflet 1987; Shifflett and McIntosh 1986–87). Structural variables (class and age) Cockerham (2005) claims were the decisive factors in each outcome. He added, gender is a highly significant variable in that women eat more healthy foods, drink much less alcohol, smoke less, visit doctors more often for preventative care, wear seatbelts more frequently when they drive, and, with the exception of exercise, have more healthier lifestyles overall than men (Abel et al. 1999; Blaxter 1990; Cockerham 2000a, 2000b; Denton and Walters 1999; Grzywacz and Marks 2001; Roos et al. 1998; Ross and Bird 1994). Furthermore, in adolescence, males tend to adopt the health lifestyles of their fathers and females those of their mothers, thereby establishing the parameters for the gender-specific transmission of health lifestyles into adulthood (Wickrama et al. 1999). Race and ethnicity are presumed to be important, but there is a paucity of research directly comparing the health lifestyles of different racial and ethnic groups. There is evidence that exercise declines more steeply for blacks than whites across the course of adulthood, yet this tendency may be explained by blacks having more functional health problems and living in less safe neighbourhoods (Grzywacz and Marks 2001).

Despite the various point of views on the debate it seems that researchers found different characteristics for the structure. Martin (2009) took the initiative and summarised several characteristics to help define a structure as he believes that a more coherent approach to social structures is the one coming from anthropology - the work of Linton (1936) who suggests social structures are understood as agglomerations of status and their action-counterparts. This means the family is therefore a social structure, since it has a set of predefined roles that shape interaction, and this account has the seeming virtue of emphasizing the importance of subjective expectations, which theorists agree, play a crucial role in the development of structure.

Elder-Vass (2010) followed the structuralist authors and agreed with the coexistence of both agency and structure relationship, and defended it by claiming that we cannot neglect the fact that human behaviour is causally influenced by external factors and can not explains agency as entirely consistent with social impact on our behaviour. “Human actions may be affected by social causes without being fully determined by them”, Elder-Vass (2010, p. 89). He also claims that social structure is best understood as the causal power of social groups.

In addition, Angel (2011) introduced a new twist to the agency–structure theory yet still supporting structuralism that believes, like Giddens, both agency and structure are connected. Angel argues a new dimension to the debate as he says that genetics provides evidence that this is the case with gene/environment interactions: The effects of agency and structure, or genes and environment, cannot be isolated. According to Angel (2011) mapping of the human genome has given rise to the possibility of a new

depth of understanding into how individual genetic factors interact with environmental factors to affect physical and mental health (Asimit, Yoo, Waggott, Sun, & Bull, 2009; Bertram et al., 2008; Cichon et al., 2009; Craddock, O' Donovan, & Owen, 2008; Mahon et al., 2009; Psychiatric GWAS Consortium Coordinating Committee 2009; Treutlein et al., 2009).

Johnston (2016) synthesized agency and structure based on Bourdieu's constructivist structuralism theory in the field of criminology where he stated that much offender decision making research so far assumes that offender motivation is guided primarily by the pursuit of a party lifestyle and good times based on work from Akerstrom, 2003; Bennett & Wright, 1984; Fleisher, 1995; Jacobs, 2000; Jacobs & Wright & Decker, 2011. Since crime is considered behaviour then this study accordingly may also suggest that social structures integration with individual agency may tend to influence behaviours including healthy ones such as participating in PA because of the collective behaviour between individuals' agency and the structure.

2.2.1 The role of religion within the agency and structure debate

After understanding the debate between agency and structure, the next section points out the role of religion in the relationship between agency and structure and how it is being investigated. Just as the structure tends to create agency among individuals leading them to create behaviour, religion being an influential structure allows individuals and encourages them to create healthy behaviours too. Starting from the gender differences sociologists help us understand that they agree that, in general, women are more religious than men on a variety of measures, but disagree about why (Hastings and Lindsay 2013; Luckmann 1967; Miller and Hoffmann 1995; Miller and

Stark 2002; Roth and Kroll 2007; Stark 2002; Schnabel 2015; Trzebiatowska and Bruce 2012; de Vaus and McAllister 1987). Yet, the relationship between religion and modernity remains controversial, particularly in relation to Islam being seen as "unmodern" and oppressive especially toward women (Asad, 2003). For example, the hijab and marriages arranged by families are seen as traditional Islamic practices that by definition restrain women's free will and free choice (Bloul 1998; Killian 2003; MacLeod 1992). In the introduction to a recent special issue of Gender & Society on gender and religion, Avishai, Jafar, and Rinaldo (2015) assert that gender and religion are both socially constructed and intersectional categories with important internal variation. This may suggest that though religion as a structure is influential, its strength may vary depending on the setting it is presented in such as the culture and its nature. This is why we may find variations in the women's participation in physical activity in different Islamic countries depending on the culture of the country. Some Islamic countries with liberal or mixed cultures such as North African countries for example, have already been encouraging youth from both genders to participate in PA since at least the 1980s, while the gender discrimination may be more visible in other Islamic countries that has a nature of conservative and extremist religious societies such as the Gulf Cooperation Council countries which include Saudi Arabia.

Though the influence of religions vary based on the culture they join based on the previous section, the social economic factor is also related to the level of faith among men and women based on Schnabel's (2016) study where he concludes with this fact.

Hence, we understand that religion is an influential structural element that creates agency among individuals, yet its influence varies depending on the gender, the culture it joins, and the socioeconomic factor which is usually followed by the level of education and awareness. The previous features are strongly connected to the structural element and help us understand the agency created by individuals who tend to use religion as a reason to encourage or discourage youth participation in physical activity.

In addition, alongside religion, the culture plays another role in influencing the creation of agency towards women's participation in physical activity in the Saudi context. Saudi Arabia is one of the leading countries according to the Global Gender Gap Index Black (2016) in gender discrimination and inequality, including in the field of sports, and of course it is due to the power of culture, religion and tradition. To understand this, McNay (2003) explained from a feminist theory point of view, the focus on agency could be seen partly as an attempt to refine the rather one-sided language of patriarchal oppression that characterized first wave feminism. As Bourdieu puts it, habitus has its moments or blips when it occasionally misfires. In general, however, the habitus is in a state of permanent revision but this revision is rarely radical because the new and unexpected is always incorporated upon the basis of previously established, embodied dispositions. Bourdieu, furthermore explains with a dialectical idea of change as generated by the interplay of necessity and contingency or, as he puts it 'the opacity of historical processes derives from the fact that human actions are the non-random and yet never radically mastered product of countless self-obscure encounters between habitus . . . and social universes' (Bourdieu, 2000, p.116).

Does this mean when a feminist theory interferes between the agency and the structure, it is aimed at creating radical change? Yes, in societies such as Saudi Arabia, women have been fighting to get their rights equal with their male peers in various fields including PA. This also may suggest that the agency is acting against the structure which refuses the exchange of resources including support, despite that the structures' agencies may vary in their refusal and resistance nature and level depending on the strength of ties for example between the female and her social networks structures. We can argue here a third point of view for the agency-structure debate, where both tend to exercise their will against each other, yet create behaviour.

In addition, various factors tend to affect the relationship between agency and structure including religion, and in this study it is crucial to understand how exchanging resources with the structures in different settings from the offline platform to the online platform varies accordingly. Accounting for the historical embeddedness (Ashcraft & Prasad, 2013) of policies in sports is necessary because policy shifts reflect cultural discourses that then help to constitute how policies are re-formed in the present. This transformation from the offline to the online concludes that the platform and role of technology plays a crucial part in shaping and adding constraints to what is being exchanged between youth and their structure as will be discussed in the next section.

Elder-Vass (2010) is one of the researchers who spoke about this element and explained we cannot make sense of social institutions without considering how they work over a short period of time and over such periods it is typically possible to abstract from the process of normative change. He adds, normative change is

increasingly common in any adequate general theory of normativity and must be able to accommodate both stability and change.

When it comes to organisations, Elder-Vass (2010) explains that their structure depends on the roles that their members occupy and these roles are essentially bundles of norms. Hence this makes organisations fundamentally dependent on normative social institutions and thus the causal powers of norm circles. He argues that although there are many important and interesting interdependencies between organisations and institutions, they remain different sorts of things. They are different because the roles of members of organisations lead them to interact in ways that result in further, non-normative mechanisms, mechanisms that give organisations quite different sorts of causal powers than those possessed by norm circles. This suggests that as long as the roles are changing in a structure the influence/ exchange of resources may accordingly change.

The changes of the platform hence, change the delivery of influence from one to another. It's not only the role; the same organisation/structure or decision maker who are active and influencer in OSNs for example may have different personalities, even a slightly different identity online from offline for various reasons. A recent study by Kosinski, Bachrach, Kohli, Stillwell, & Graepel (2014) discussed this by examining a sample of over a third of a million users. It was the largest dataset ever recorded relating psychological traits to web behaviour and how users' behaviour in the online environment, captured by their website choices and Facebook profile features, relates to their personality. The study was measured by the standard Five Factor Model personality questionnaire which includes openness, conscientiousness, extroversion, agreeableness and neuroticism. Their results show that there are psychologically

meaningful links between users' personalities, their website preferences and Facebook profile features and conclude that predicting a user's personality profile can be applied to personalize content, optimize search results, and improve online advertising.

This investigation may imply again the integration between the agency and structure theory where the agency of individuals who are active online tend to reveal a certain character of themselves online either because their audience wants them to do so or because they want to attract more audience and followers to meet their goals. This is shown the most through the extroversion personality trait as it measures a person's tendency to seek stimulation in the external world, the company of others, and to express positive emotions.

To conclude, the previous sections explained the understanding of physical activity participation from its roots where agency and structure created ongoing debates. It also shows how the debate delivered arguments between researchers who favoured one over the other yet highlighted the importance of investigating both to get a better understanding. The section also explained how investigating both agency and structure tends to deliver healthy behaviour including participating in physical activity based on what the structure provides and how it is being communicated to youth. It also pointed out that agency among youth is influenced by religion, culture and tradition, which consequently affect the gender through time and place in a network and socioeconomic factors which will be investigated later on in the following chapters. It also showed the similarities of the agency and structure debate and its implication in the social network structural theory. The debate also allowed conceptualising family and religion as structures while individual physical activity behaviours were seen as a pattern of interactions that form the practice of physical

activity. The following section will focus on physical activity and the literature covering the participation among youth.

2.3 Understanding physical activity participation

Physical activity is defined as bodily movement caused by skeletal muscles that result in increased energy expenditure (Caspersen, Powell & Christenson, 1985), including incidental movement and purposeful exercise. Physical activity is complex and encompasses several dimensions (frequency, intensity, duration, and mode), which presents a challenge for physical activity measurement (Tudor-Locke & Myers, 2001). Physical activity is a target of public health interventions, which often have modest success (Heath et al., 2012; Kriemler et al., 2011; Metcalf, Henley & Wilkig, 2012). Factors that may influence the success of physical activity interventions or their varying health outcomes (Bouchard, Blair & Church, 2012) have received little study. Evidence-based guidelines advise that children and adolescents should engage in at least 60 minutes of moderate-to-vigorous physical activity per day (Mark & Janssen, 2011; Strong et al., 2005). However, population-based studies indicate few children and adolescents achieve these levels of participation (Collings et al., 2014; Troiano et al., 2008). Accordingly, considerable attention has been drawn towards identifying settings and factors that afford youth the opportunity to regularly engage in physical activity at health-enhancing levels. This section focuses on the factors influencing participation.

Researchers who were interested in studying this topic further seem to have divided into two groups based on distinct perspectives. The first group investigated the topic from the point of view of the self-efficacy (self-motivation) theory, and the other group investigated it from the structural point of view theory (Carroll & Loumidis, 2001; Perlman, 2013; Standage, Gillison, Ntoumanis & Treasure, 2012).

Both groups suggested various factors to be investigated to help in increasing participation; some of the factors are mental, and others physical.

The self-motivation point of view as identified in numerous studies identified important psychological correlates of physical activity engagement within physical education (PE) and leisure time settings (e.g., perceptions of autonomy, self-efficacy and enjoyment) (Carroll & Loumidis, 2001; Perlman, 2013; Standage, Gillison, Ntoumanis & Treasure, 2012). Additional demographic and contextual factors also include body mass index (BMI), gender, age, sport and session type (i.e., training sessions versus matches) (Cohen, McDonald, McIver, Pate & Trost, 2014; Fenton et al., 2015a; Leek et al., 2011; Sacheck et al., 2011).

Another similar theory focusing on the individual's self-efficacy is the Self-Determination Theory (SDT), (Deci & Ryan, 2000), which is a theoretical framework that has been successfully applied in order to understand the psychological processes likely to impact physical activity engagement across many contexts, including youth sport (Fenton, Duda, Quested & Barrett, 2014; Owen, Smith, Lubans, Ng & Lonsdale, 2014; Teixeira, Carraca, Markland, Silva & Ryan, 2012).

Additional self-efficacy theories have suggested that personality and traits influence participation, and the impact of these factors is observable across ages, genders and cultures of an individual. According to a systematic meta-analysis review conducted by Wilson and Dishman (2014) on 64 studies including a total of 88,400 participants to determine the role of personality in the studies, physical activity participation was found to be related to personalities such as extraversion in 88 studies, neuroticism in 82 studies, conscientiousness in 69 studies, openness in 51 studies and agreeableness in 52 studies. The researchers concluded that analysis

should be expanded to include results of previous reviews and to provide additional support for a relationship between physical activity and openness.

In addition, according to Fenton, Duda and Barrett (2016), it is only recently that researchers have begun to employ accelerometers in order to examine the contribution of the social environment and ensuing motivation to moderate to vigorous physical activity engagement among youth (e.g., Fenton et al., 2014). These studies pointed toward the social environment as a prominent factor influencing habitual levels of accelerometer assessed physical activity engagement among youth.

Hence, the other perspective of researchers who investigated the role of the structure in influencing physical activity participation focused on the following factors: family, friends, school, and the environment. McNeill, Kreuter and Subramanian (2006) performed a systematic review of the role of social networks. They observed that the Task Force on Community Preventive Service's recent review of physical activity interventions had found strong evidence that social support interventions increase physical activity levels and that buddy systems, walking groups and exercise contracts with another person can increase time spent engaging in physical activity and frequency of exercise (Kahn et al., 2002). The previous review also stated that having a spouse and supportive family and friends is positively associated with increased physical activity (Eyler et al., 1999; Sallis, Hovell & Hofstetter, 1992; Sternfeld, Ainsworth & Quesenberry, 1999). According to McNeill, Kreuter and Subramanian (2006), select social network characteristics such as number of individuals in the network, frequency of contact, and network homogeneity have been positively associated with energy expenditure and exercise adherence (Gillett, 1988; Spanier & Allison, 2001), but additional studies exploring these social network characteristics are needed. The review also suggested that interpersonal relationships

potentially influence physical activity, as these relationships can provide social support and establish social norms that constrain or enable health-promoting behaviours (Berkman, 2000; Heaney & Israel, 1997). For example, engaging in physical activity with others can help to establish positive social norms for physical activity throughout an individual's social network. Observing the physical activity behaviour of others can also help individuals learn about physical activity while receiving positive feedback about the benefits of physical activity (Stahl et al., 2001).

Another systematic review on the role of social environment and social networks and their influence on physical activity by Macdonald-Wallis, Jago, and Sterne (2012) pointed out that friendship plays an important role in shaping physical activity behaviours. The study also suggested that physical activity interventions target peer groups and that the influence of friendship groups may have utility as a means of increasing youth physical activity. The following section explains the importance and benefits of physical activity.

2.3.1 Importance of physical activity

This section explains the benefits of participating in physical activity and the factors causing inactivity. According to the Physical Activity Guidelines Advisory Committee (2008), physical activities could be defined depending on the levels it includes. The Committee states those levels as follows:

> (1) volume, representative of overall energy expenditure, commonly reported as METs/time, (2) general quantity, a measure of frequency of physical activity meeting a minimum time requirement without reference to intensity, (3) quantity of moderate-to-vigorous and (4) quantity of mild- to-moderate physical activity, reflecting frequency of continuous physical activity at a specified intensity meeting a minimum duration (e.g. bouts per week of

moderate-to-vigorous activity lasting at least 20 min), (5) frequency, and (6) active/inactive dichotomy.

The specification of levels as quantity of mild-to-moderate or moderate-to-vigorous levels is a result of mixed physical activity definitions within the literature: Past studies have reported the effects of physical activity as 'mild-to-moderate' or 'moderate-to-vigorous' physical activity (Wilson & Dishman, 2015). A range of words tends to be associated with the definition of physical activity, such as exercise, sports, and physical education. However, physical activity is referred to sometimes as sports because of language differences, such as in the Arabic language.

The World Health Organisation (WHO) identified physical inactivity, which had caused an estimated 3.2 million deaths globally as of 2012, as the fourth leading risk factor for global mortality. A review on physical inactivity by Foster, Hillsdon and Thorogood (2009) also suggested that not practicing enough physical activity leads to an increased risk for multiple chronic diseases including coronary heart disease. In addition, the results highlight that regular physical activity can reduce this risk and also provide other physical and possible mental health benefits. The findings of this review indicate that professional advice and guidance with continued support can encourage people to be more physically active in the short to mid-term. This is one of the areas the present study focuses on, i.e. on linking the participants with the right people who can guide them and increase their awareness of physical activity.

Many of the previous studies in the field showed extended benefits of physical activity, mostly relating to health. For example, Sparling et al., (2000) claimed that physical activity has the potential to improve the health of the public. Biddle et al., (2001) also argued that there is a strong case for promoting participation in physical activity because of the key role it plays in the prevention and reduction of obesity

among children and young people. Recent studies went even further to suggest that 50% of adults and 25% of children will be obese by 2050 if no further preventative action is taken as (Butland, Jebb, Kopelman, McPherson, Thomas, Mardell, & Parry, 2007; Evans, B. 2010).

According to various studies (e.g., Hawk, 1994; Murray and Lopez, 1996; Teychenne, Ball and Salmon, 2008), the influence of practicing physical activity could affect six categories of individual health: mental, spiritual, emotional, intellectual, social and physical health. If individuals exchange resources and engage in physical activities, they can enjoy benefits in all of these categories.

Mental health, for example, is an integral and essential component of health. As the WHO constitution states, "Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity." The WHO (2012) adds the following evaluation of the definition:

> An important consequence of this definition is that mental health is described as more than the absence of mental disorders or disabilities. Mental health is a state of well-being in which an individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and is able to make a contribution to his or her community. In this positive sense, mental health is the foundation for individual well-being and the effective functioning of a community.

This suggests that the key factors in influencing continued and useful levels of physical activity participation are not necessarily the amount of physical activity one does, but how and in what social context one does it.

Murray and Lopez (1996) stated that depression is one of the leading causes of mortality and morbidity worldwide. Depression is the leading cause of disability as

measured by years lost due to disability (YLDs) and the 4th leading contributor to the global burden of disease in 2000. By the year 2020, depression is projected to reach 2nd place in the ranking of disability life years (DALYs) calculated for all ages, both sexes. Today, depression is already the second cause of DALYs in the age category of 15-44 years for both sexes combined. Saudi Arabia is included among the developed countries facing an increase in its depressed population. Alibrahim et al. (2010) conducted a review of eight studies on Saudi Arabia, all of which tested the levels of depression. The researchers concluded that there is a risk of increase in the overall level of depression due to the socioeconomic changes. They also found that men are less likely to be depressed than women.

To be able to decrease depression and other mental health diseases, studies showed that physical activity influences mental health and helps reduce depression and anxiety, produces positive mood, increases self-esteem and provides individuals with restful sleep (Landers, 1997; Burnett-Zeigler, Schuette, Victorson, & Wisner, 2016).

The beneficial effect of physical activity for different dimensions of mental health (MH) has become increasingly evident, and the inverse association between physical activity and symptoms of depression is well known (Teychenne, Ball & Salmon, 2008).

Previous research found that physical activity and exercise brought about small, but statistically significant, increases in physical self-concept or self-esteem (Spence et al., 1997). These effects were generalised across gender and age groups. In comparing self-esteem scores in children, Gruber (1986) found that aerobic fitness produced much larger effects on self-esteem scores than other types of physical education class activities (e.g., learning sports skills or perceptual-motor skills).

Hence when individuals engage in physical activity and motivate each other and themselves, such exchanges of emotional support tend to create networks for these individuals; the networks tend to strengthen or weaken depending on the ties connecting each individual with the structure he or she belongs to and how individuals interact to support other.

Finally, emotional health is generally defined as the ability to feel and express the full range of human emotions, give and receive love, achieve a sense of fulfilment and purpose in life, and develop psychological hardiness (Maslow, 1970; Snowden, Steinman, Carlson, Mochan, Abraido-Lanza, Bryant... & Lenze, 2015). They explained those with peak emotional health find beauty and connectedness in life, tolerance and acceptance of others, and full acceptance of self. Similarly, Maslow's self-actualisation occurs as individuals achieve their full potential as human beings, which is manifested through fulfilling relationships, the full development and expression of talents and abilities and a sense of fulfilment and purpose in life (Maslow, 1970). As described above and as advocated elsewhere, spiritual health (and the path it advocates) may serve as a starting point for the development of emotional health, self-renewal and self-actualisation (Leichtman & Japikse, 1983). Not surprisingly, recent reports in the research literature have found significant positive correlations between spiritual well-being and hardiness (Carson & Green, 1992), coping ability (Maton, 1989), marital adjustment (Roth, 1988) and key indicators of emotional health and self-actualisation. At the same time, an inverse relationship between spiritual well-being and excess anxiety, a sign of negative emotional health, has been reported (Kaczorowski, 1988).

According to Lubans, Plotnikoff and Lubans (2012), individuals working in child mental health practice should be encouraged to recommend physical fitness

programmes for older adolescents who may be at risk. There is strong evidence to support the benefits of physical activity on physiological health in youth (Strong et al., 2005), and some evidence to suggest that structured physical activity programmes contribute to social and emotional well-being in at-risk youth (Lubans, Morgan, Callister & Collins, 2009; Schneider-Jamner, Spruijt-Metz, Bassin & Cooper, 2004). Physical fitness programmes that provide meaningful challenges for individuals and an opportunity to improve fitness and apply behavioural skills (e.g. goal setting, self-monitoring and self-assessment) have demonstrated promise in promoting physical activity in the short term (Lubans, Morgan, Callister & Collins, 2009; Schneider-Jamner, Spruijt-Metz, Bassin & Cooper, 2004). Individuals who develop a routine of participating in lifetime activities (e.g. weight training and aerobics, circuit training) that can be easily carried into adulthood are more likely to become active adults (Corbin, 2002), and participation in such programmes may act as a protective factor against mental illness in both the short and long term. Considering the high prevalence of depression and low self-esteem in at-risk youth (Gendron et al., 2004; MacMahon, 1990), their low rates of participation in structured physical activity programmes (Burton & Marshall, 2005; Duncan et al., 2002) and the potential of such programmes to improve social and emotional well-being, encouraging at-risk youth to engage in physical activity programmes is justified. It remains untested whether the improvements in social and emotional well-being associated with participation in physical activity programmes are sustained once youth return to their daily routines. Until there is evidence for the long-term benefits of physical activity programmes, clinicians working with at-risk youth are encouraged to recommend physical activity programmes that promote sustainable physical activity as a behaviour change.

Loneliness and the effect of social isolation on health and mortality, in turn, haves been attributed in part to the direct influence of friends and family on a person's health behaviours (e.g., exercise, adequate and regular rest) which influence physiology and health (House et al., 1988), to the extent that socially isolated individuals are more likely to engage in poor health behaviours, health behaviours which may help explain their increased mortality risk. Two lines of evidence suggest otherwise, however. First, health behaviours in epidemiological and field studies have failed to explain the health effects of social isolation in humans (Hawkley, Thisted et al., 2010; Seeman, 2000).

Moreover, according to Jankowicz-Szymanska, Mikolajczyk and Wojtanowski (2012), intellectual disability affects all spheres of people's lives who suffer from it. It lowers the level of intellectual functioning, often stigmatises, characteristically changing features, and decreases motor performance. There is also a chance to improve the quality of life of people with mental retardation by means of physical exercises and by enhancing coordination, the quality of gait and efficiency in performing everyday activities. This means the benefits extend to people with special needs, and offers more stability to produce and get involved even further in artistic skills.

Social health is achieved when an individual feels genuine love, acceptance, and a sense of belonging within a larger social unit. There is a direct correlation between the concept of spiritual health and Maslow's (1956) concept of love and acceptance needs. As with physical and safety needs, ideally, this dimension of health is nurtured during infancy and childhood within the context of a loving family. Positive social health then becomes crucial for the future development of spiritual health as it is within the context of the family and other social institutions that a

spiritual worldview is usually learned and adopted. In turn, once a full sense of spiritual well-being has been developed, it is the path advocated by the spiritual worldview that defines proper social relations with others. Until the need for belonging and acceptance has been met, it is difficult to achieve spiritual and emotional health (Hawks, 1994). Practicing physical activity will also enhance opportunities to meet and spend time with others. Understanding the interplay of psychological, social, and environmental influences on health and health-related behaviours such as physical activity represents a key research need to direct more policy attention to health promotion (McGinnis, 2002).

Philosophers had their share in explaining and addressing physical activity as well. Arnold (1999) and recently Austin (2011), following an Aristotelian perspective, argued that virtues are not only necessary to promote and preserve sport as a valued practice and to procure its distinctive intrinsic goods, but also contribute to and help constitute what it means to be a morally educated person. Austin (2011) also argued that sport should be approached as a moral practice and that the function of sport should be the cultivation of moral and intellectual virtue. Arnold went on to explain that when people enter into sport as a practice they become members of an extended community, one distinguished by its almost familial bonds and commitments. All members are expected to devote themselves to the shared internal goals and values for which they are jointly and individually responsible. It is this sense of community that is important to all practices. It not only provides a framework for nurturing and cultivating social virtues such as sympathy, compassion, and generosity, but also creates an opportunity to develop a feeling of ground identity (Arnold, 1999).

There is general agreement that physical activity participation offers various benefits. While some research has focused on the spiritual and religious side, other

research has focused on emotions and health. Participating in physical activity may be increased or prevented due to the same issues. This phenomenon is explained further in the results chapter after focusing on the characteristics of physical activity participation in a network and how such aspects or features may create networks and may strengthen the ties within networks and motivate the individuals to sustain physical activity as a lifestyle.

In addition, studies on participation in physical activity have attracted many sports specialists, in particular specialists in the health and psychology field who investigate possibilities and opportunities to increase participation and the motives behind participation. Rees et al., (2001) performed a systematic review examining the barriers and facilitators that affect the participation of young people aged 11-16 years old. The researchers argued that physical activity by young people entails material and social context, with youth at greatest risk of inactivity belonging to groups considered as socially excluded. The researchers claimed that while this has been known for some time, much less is known about how different social factors interact, and about where and how to intervene successfully. In addition, the researchers found that even though there is an overlap between physical activity and healthy eating, as of 2001, only 90 studies had met their criteria and focused on physical activity. The researchers indicated that 42 studies had interventions with outcome and process, 41 were non-intervention and seven were systematic reviews (Dudley, Okely, Pearson, & Cotton, 2011; Demetriou, & Höner, 2012; Pearson, Braithwaite, & Biddle, 2015). Eighteen addressed social exclusion, and only one involved low-income participants from ethnic minorities or from outside the UK. Most of the interventions were implemented by teachers in school settings, and the studies largely passed over young

people who were socially excluded. Five focused on theories of social learning, and three addressed ethnic minorities in the USA.

Rees et al., (2001) also argued that it was important to point out that young people were not involved in developing these interventions. The researchers stated that only two studies described how young people helped develop components of interventions such as selecting music for aerobic classes and creating educational videos, and only two other studies described how young people participated in focus groups to identify aspects of physical activity that needed to be addressed.

Different theories and methods were used and it seemed that since 2001, most of the theories that were used mainly focused on Self-Efficacy, Planned Behaviour, Reasoned Action and the Social Cognitive theories. However, a few used the Social Network Structural theory in the field of physical activity. Nixon (1992) claimed that structural social network analysis is a potentially powerful tool for conceptualising and explaining athletes' acceptance of the risks of pain and injury in sport. His findings also included how concepts and assumptions from structural social network analysis can clarify the conditions that make athletes vulnerable to cultural and interpersonal messages that exhort or encourage them to play with pain and injuries. Nixon argued that the willingness of athletes to risk pain and injuries is affected by structural features of their sports networks (called 'sportsnets'), by relations with individual sportsnet members, and by 'the culture of risk' that is deeply embedded in serious athletic subcultures.

Shoham et al., (2012) performed another study that adopted the social network structural theory. The researchers argued that obesity may be 'contagious' between individuals in social networks. Social contagion (influence), however, may not be identifiable using traditional statistical approaches because contagion is

indistinguishable from homophily (the propensity for individuals to select friends who are similar to themselves) or from shared environmental influences. Therefore, the researchers applied the stochastic actor-based model (SABM) framework developed by Snijders et al., (2010) to examine data on adolescent body mass index (BMI), screen time, and time spent playing active sports with the primary hypothesis that social influences on adolescent body size and related behaviours are independent of friend selection. Their study concluded that there is support in both schools for homophily on BMI, but also for social influence on BMI. Their study also showed there was no evidence of homophily on screen time in either, , and only one of the schools showed homophily on playing active sports. There was, however, evidence of social influence on screen time in one of the schools and on playing active sports in both (Shoham et al., 2012). These results, according to the authors, suggest that both homophily and social influence are important in understanding patterns of adolescent obesity and hence the intervention efforts should take into consideration of peers' influence on one another, rather than treating "high risk" adolescents in isolation.

The previous example explains how structural features affect physical activity participation with regard to the role of peers. Regarding the role of motivation in physical activity participation, four theories have been identified in most existing studies. The first comes from Bandura (1997), who identified self-efficacy as beliefs defining an individual's capacity to carry out actions and to make decisions that are part of success in progressing to positive outcomes. According to Conner and Sparks (2005), the second theory that has been used to understand health-related behaviour in many studies is the theory of planned behaviour (Ajzen, 1991). According to this theory, behaviour is predicted through an intention to perform that behaviour and perceived behavioural control. The third theory, the reasoned action theory, is also

used in the field and is defined, according to Ajzen and Fishbein (1980), as a widely accepted and tested behavioural model that examines the determinants of consciously intended behaviours (Davis, 1989).

The fourth theory was developed by Bandura (1986). It is known as social cognitive theory and is one of the most widely used theoretical frameworks. It has been used for the study and promotion of physical activity and references the individual's capabilities to symbolise the meanings of behaviour, their ability to foresee the outcomes of given behaviour patterns, to learn by observing others, to self-regulate behaviour and to reflect and analyse experiences among the critical personal factors that help determine whether or not a behaviour will occur in a particular situation.

Only a few studies have focused on the structural approach to understanding the motivation behind participation in leisure and physical activities. Stokowski (1994) identified the social structural perspective and related it to leisure. His work was later supported by Aker's (1998) theory of social structure and social learning (SSSL). Aker argued that structural variations in deviant behaviour such as gender or race and ethnic differences in underage or heavy drinking are mediated by social learning variables, a theory which could be implemented in the field of physical activity. Degenne and Forsé (1999) led the next development in this theory. They focused on the structure of social networks and in particular on the relationships between students while promoting physical activity. Degenne and Forsé highlighted the following three main points: "structure takes precedence over the individual, structure could not be reduced to the sum of individual actions, and the structure exerts absolute constraint on individual action". All three points are highlighted in the following chapter.

While searching the academic literature 50 studies were found, including systematic reviews related to physical activity participation from 2006 through 2016. The reviews examined socioeconomic status, physical education, technology, self-efficacy, the role of the environment, friends' influence, school interventions, coaching and sports clubs, physical activity participation, and structured health and fitness programmes/interventions. Systematic reviews for youth with disabilities, physical activity benefits, and ages younger or older than 15-24 years old were excluded.

The search, brought forward several limitations and recommendations. The limitations and recommendations suggested a need for longitudinal studies. The literature search was limited to studies published in English, which does not represent all the different societies and cultures and could not be generalised on a large segment of the population. There also appeared to be limitations in studies focusing on differences between genders in practicing physical activity. While some studies showed that interventions delivered in after school settings turned out to be ineffective (Atkin, Gorely, Biddle, Cavill & Foster, 2011), additional studies concluded that school based interventions showed greater positive results than those in any other setting (Demetriou & Höner, 2012; Lonsdale et al., 2013; Dudley, Okely, Pearson & Cotton, 2011; Kriemler et al., 2011; Escalante, García-Hermoso, Backx & Saavedra, 2014).

Enjoyment appeared to be the key to progress with children and adolescents and as such, could be used to ensure sustainability and continuous results. In addition, though most studies focused on female adolescents, most agreed that boys were more active than girls, and this imbalance encouraged more research on youth to understand the differences and factors behind the differences. Most systematic reviews related

participation in physical activity with health, socioeconomic status, technology and video games, but did not connect social networks with physical activity, which raises the significance of this study. Investigation on the role of socio economic status (SES) noted that 42 per cent of the included studies reported no or an opposite relationship between social networks and physical activity. There was also an inconsistent use of measures for both variables that complicates explanations and interpretations of the findings. This inconsistency fortifies the claim that there is no single explanation for a possible difference in physical activity between different socioeconomic groups (Stalsberg, and Pedersen, 2010). De Bourdeaudhuij et al., (2011) came to a similar conclusion. Results of the secondary analyses found no overall significant differences between low and high SES groups, but some specific effects were revealed. Results from the first study showed an increase in objective physical activity in the low SES group (P 5 0.015) compared with no significant effects in the high SES group. In the second study, larger effects were found in adolescents of high SES (increase of 11 min day21 $P < 0.001$), compared with adolescents of lower SES (increase of 7 min day21, P50.02) at the longer term. The third study showed a positive effect on school-related physical activity in adolescents of high SES ($P < 0.05$) and on leisure time transportation in adolescents of low SES ($P < 0.05$). The authors concluded they were not able to show a significant widening or narrowing of inequalities in European adolescents.

The two reviews on the use of technology acknowledged that active video games enable light to moderate physical activity, though limited evidence is available to draw conclusions about the long-term efficacy of such games for physical activity promotion according to Biddiss and Irwin (2010). After two years, this was confirmed again and laboratory studies demonstrated that active video games are capable of

providing light-to-moderate intensity physical activity. However, only three interventions supported active video games as an effective tool to significantly increase physical activity or exercise attendance. As active video games are becoming more popular, additional research is needed to determine how to capitalise on the potential of active video games to increase physical activity (Peng, Crouse & Lin, 2012). In addition, participation in a coach training programme was not associated with higher physical activity, and research is needed to inform volunteer coach training programmes that provide coaches with skills necessary to increase the percentage of practice time spent in moderate-to-vigorous physical activity as Schlechter, Rosenkranz, Milliken and Dzewaltowski (2016) suggested. It was also recommended that community-based interventions delivered positive outcomes and measured changes.

As the number of studies increased, the area of interest increased and there seemed to be an overlap between studies in physical activity relating it to factors such as health. In addition, the role of parents as influencers was pointed out in the systematic review (Edwardson & Gorely, 2010). It was suggested that parents provide a target for interventions to increase youth physical activity through encouragement to promote the importance of physical activity to their child either through their own behaviour or by supporting their child to be active. The systematic reviews revealed greater influence on youth participation due to peers and school interventions.

Accordingly, this encouraged me to start my investigation with both structures: parents and schools. I focused on schools because friends are more influential at this critical age. It is also important to mention that all of the systematic reviews appeared to include social norm involvement. Inclusion of this factor is likely because scholars are aware that structure tends to play a key role in motivating youth

to participate in physical activity, and efforts to raise physical activity participation tend to be more effective when directed through an agent such as the physical activity teacher or tool and when the efforts are planned and monitored.

2.3.2 Physical activity participation in Saudi Arabia

The previous sections have examined the wider scope and macro level of physical activity participation in the world. This section now reviews the same subjects at the micro level, looking at the Gulf Cooperative Council (GCC) countries of Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and the United Arab Emirates. In the GCC countries, the high prevalence of obesity, type 2 diabetes and other chronic diseases is now similar to that in developed countries (Amran et al., 2007). For example, Amran et al., (2007) found that 25% or more of the adult population have hypertension; four out of six countries of the GCC (Kuwait, Oman, Saudi Arabia and United Arab Emirates) are among the top ten countries globally in the prevalence for diabetes; and, cardiovascular disease is the leading cause of death (Mabry, Reeves, Eakin & Owen, 2009).

A significant increase in the level of physical inactivity among the Saudi population has been recently reported, predisposing them to health problems. So far, the majority of studies conducted on Saudi society have focused on either the male population or on children and adolescents; however, the prevalence of sedentary lifestyle-related obesity has been escalating among Saudi women. This demonstrates a growing need to understand how social restraints imposed upon Saudi women affect women's health and their response to current treatment methods (Al-Eisa & Al-Sobayel, 2012).

There are only three existing studies on youth lifestyle and its influence on youth participation in physical activity in Saudi Arabia. First, a study conducted by

Al-Hazzaa, Musaiger, and the ATLS Research Group (2010) highlighted an increase in the number of youth suffering from obesity as a result of the lack of physical activity due to associated lifestyle changes, including the use of technology according to an Arab Teens Lifestyle Study (ATLS) project conducted in 2009. In this project, which was the first of its kind in the region to study the change in youth lifestyle, Al-Hazzaa (2010) stated that adolescents living after the oil boom of the 1970s and 1980s have become less active and more prone to obesity because of this more relaxed lifestyle. He also argued that these adolescents now spend more time in front of the television and playing video games, which involves less activity. This sedentary propensity of adolescents today not only applies to Saudi Arabia but to the Gulf States and the Arab world, and the rest of the developed world. The 2009 study, which involved 8,000 high school students in nine cities across the region, including Riyadh, Dubai, Mosul and Cairo, measured students' activity level, sleeping trends, eating habits and obesity level. The figures showed that Kuwaiti and Saudi youth were the most obese among adolescents, aged 14 to 20, in the Gulf. Iraqi and Jordanian adolescents were the least obese, according to the ATLS figures.

Second, a study on adolescent obesity by Al-Hazzaa, Abahussain, Al-Sobayel, Qahwaji, and Musaiger (2011) was aimed at reporting the prevalence of physical activity, sedentary behaviours and dietary habits among Saudi adolescents and examined the interrelationships among these factors using representative samples from three cities: Khobar, Jeddah, and Riyadh.

Third, a study on adolescent obesity by Al-Eisa and Al-Sobayel (2012), who focused on assessing the level of physical activity among Saudi women, measured daily step count and clarified the association between physical activity and health beliefs (age 19 to 44) through a focus on self-efficacy theory and the Health Locus of

Control (HLC) assessment scale.

Studies conducted in the region hitherto have not been adequately comprehensive and do not represent a large population of the country's youth. The tools used in these studies did not facilitate the exchange of ideas between parties, the researcher and the participant. In all three cases, it was unidirectional and depended on a quantitative method, which did not allow a larger group to participate.

2.3.3 Physical activity and religion

To understand Saudi Arabia's youth, it is important to look at their culture, starting with their religion as the first element that shapes their identity and motivates their behaviour, including their physical behaviour. It is important to understand how and why religion or Islam influences their motives, even when it comes to their participation in physical activity, because everything in their lifestyle would in one way or the other overlap with religion. Understanding their religion is important because Saudi Arabia is an Islamic country ruled by the Qur'an, the Islamic holy book, and the Hadiths (the acts and sayings of the Prophet Mohammed [peace be upon him]). Within this faith, one cannot worship God without referring to both texts. Many of the actions and reactions of individuals in Islamic countries are driven by the motive that when they perform an Islamic act, they gain deeds, and their level of practice thus increases and strengthens.

The Islamic viewpoint emerged around 1,437 years ago with a chosen man receiving orders (a mission) from his god to read and learn (to educate himself) and guided goals to achieve an outcome (plan, methods, objectives). He also had support from his fellowmen and worshippers (structure and social support) that helped him to archive his goal (results).

This man is the prophet Mohammed, his book is the Qur'an, and his message was to spread Islam, which he did and his plan is still being put into practice. The gist of his story and mission could be summed up in one sentence; to achieve a mission or a goal, education with a guided plan, methods, objectives, and a structure including people to provide support is needed.

The Prophet Mohammed was taught and then advised people to practice physical activity; he showed them the benefits of it and managed to prepare a well-built army to fight, and a healthy society. The following examples illustrate how physical activity was introduced in Islam.

First, in the Qur'an there are different interpretations of the term "physical activity." There is no reference to the exact term of physical activity, yet there are references to the components of physical activity and words such as "sports, leisure, play, move, and walk." The word "sports" is used in eight places with reference to the meaning of the word leisure such as, in Surah Ad-Dukhan: We created not the heavens, the earth, and all between them merely in (idle) sport: (38). [1]The word "play" is mentioned 46 times, also with reference to leisure; for example, Surah Az-Zukhruf: So let them flounder (in their talk) and play until they meet the Day which they are promised. (83).

Moving haphazardly did not seem to be encouraged in the Qur'an, in fact it seems that the use of the words "move and movement", which is referenced in 60 places, had a sort of negative implication usually. For example, Surah Ghafir: No one quarrels about the verses of Allah, except those who disbelieve. So, their (prosperous) movements in the cities should not deceive you. (4)) (Surah At-Tur: And the mountains will move away with an awful movement. (10)) (Surah Al-Hijr: By thy life

[1] These are quotes referenced from the Quran, and include the details of the location of the verses for additional reading.

(O Muhammad) they moved blindly in the frenzy of approaching death. (72)) and (Surah Al-Qiyama: Move not your tongue concerning (the Qur'an, O Muhammad SAW) to make haste therewith. (16))

However, when this movement is associated with a guided act such as walking, the reference changes and the implications appear positive in almost all 59 places where the term appears in the Qur'an, not to mention it tends to come with encouragement. For example, the Qur'an (Surah Al-Mulk 67:15) states the following: "He it is, who has made the earth subservient to you, so walk in the path thereof and eat of His provision, and to Him will be the Resurrection." This passage… (i.e. easy for you to walk, to live, and to do agriculture on it)

In another passage, the Qur'an (Surah Muhammad 47:17) states, "While as for those who walk aright, He addeth to their guidance, and giveth them their protection (against evil)."

The Qur'an (Surah Al-Qiyama 75:33) states, "Then he walked in conceit (full pride) to his family admiring himself!", and later the Qur'an (Surah At-Takwir 81:28) again emphasises, "Unto whosoever of you willeth to walk straight."

Moreover, the emphasis in the Qur'an is on one sport – equestrian competition – throughout Islamic history, especially when Allah Almighty referred to horse riding at the time of war: "By the (steeds) that run, with panting (breath); Striking sparks of fire (by their hooves); And scouring to the raid at dawn; And raise the dust in clouds the while; Penetrating forthwith as one into the midst (of the foe)" (Al-`Adiyat 100: 1-5). Horses are also important in days of peace. Allah Almighty says, "And (He has created) horses, mules and donkeys, for you to ride and as an adornment" (An-Nahl 16:8). Allah Almighty also recommended the Prophet to care

for horses in the following Qur'anic verse: “And make ready against them all you can of power, including steeds of war” (Al-Anfal 8:60).

Secondly, in the Hadith, which is supplementary to the Qur’an and a text that requires study by Muslims, who cannot practice Islam without consulting both texts, apparently states the importance of physical activity starting from the act of practicing all five pillars from prayer to pilgrimage. Abu Hurairah Radiyallahu ‘anhu narrates that Nabi Sallallahu ‘alaihi wasallam stated the following: “Anyone of you who leaves his home to come to my masjid, for every footstep a virtue is written, and for every other footstep a sin is erased, until he returns” (Ibn Hibban).

Moreover, and particularly with reference to sports and being physically fit and strong, The Prophet (on the authority of Abu Hurayrah) is reported to have said, “The strong believer is better and more beloved to Allah than the weak believer, while there is good in both.” And it was reported by Ahmad ibn Hanbal that when the Prophet (peace and blessings be upon him) raced `A'ishah, “she outran him. Then they had another race where he outran her, whereupon he said, ‘This time makes up for the other.’”

Different Hadiths have included the history of practicing physical activity in Islam, including running, equestrian competition, camel racing, archery, fencing, wrestling, weightlifting, high jumping, stone tossing and swimming. Further, the Khalifs (who came after the prophet to ensure the continuity of his message) also encouraged such activity. Al-Jahiz reported that “`Umar ibn Al-Khattab wrote to his governors saying, ‘Teach your children swimming, archery and horsemanship.’"

In addition to the previous sports, fencing, weightlifting, stone tossing and high jumps were introduced for Muslims. Introduction of these sports suggests that

physical activity was used to strengthen the people, to build better armies and to allow individuals to help each other build, take care of and protect their community.

The choice of physical activities apparently reflects the motives of preparing good soldiers to protect and defend during wars, yet the stories also show a balance as most of these activities were used in leisure as well. This means that the advantage of practicing such physical activities was to build not only tough men, but also a content and energetic society, as citizens could release and charge their energy in such leisure activities. There also seems to be another point worth mentioning: the plural form was used while addressing people. There are consistent and multiple references to teaching groups, to doing things in groups and to the rewards of gaining enormous deeds due to doing good acts in groups. For example, AlBukhari stated, "Abdullah ibn 'Umar that the Messenger of Allah, may Allah bless him and grant him peace, said, 'Prayer in a group is twenty-seven times better than the prayer of a man by himself.'"

The emphasis that each individual is able to influence his or her friend was mentioned in an authentic Hadith, in which the Prophet Muhammad (saws) said, "A person is likely to follow the faith of his friend, so look whom you befriend." In addition, when the Prophet (saws) was sent with the Da'wah to establish the Deen of al-Islaam, he did not do it on his own. Rather, Allah chose for him companions who accompanied him and who carried the Message until it was complete. This is related to the important role of social networks and the influence of peers and the structure, the strength of the networks individuals decide to be in, and the path they draw for themselves. Moreover, it is crucial to point out that the reference to education has been emphasised since the very beginning of Islam. As reported by Ibn Hisham (d. 218 H / 833 CE), at the beginning of Islam, Gabriel appeared to Muhammad one night

when he was sleeping in a cave on a mountain called Hira in Mecca, where he used to go for a spiritual retreat for a month every year. Carrying a book, Gabriel commanded him to "read." Muhammad refused the order twice before finally asking about what he was supposed to read. Gabriel replied with following verses of the Qur'an (Surah Al-'Alaq 96:1-4): "Read [O Muhammad!] in the name of your Lord who created. He created man from a clot. Read, and your Lord is the Most Honourable who taught with the pen."

Physical activity in Islam has been constructed as a highly desirable activity, which has to be implemented with a guided plan, methods and objectives so it can help individuals reach the goals required. This focus on physical activity emphasises the important role of education and social structure while conveying or delivering a message. Practicing physical activity for the sake of just practicing would not ensure its sustainability; however, when youth are taught the importance of physical activity, their awareness may gradually increase and help in their determination to maintain it as an important routine in their lifestyle. Physical activity according to the Islamic teachings should be used to achieve better health and strength, while leisure may ensure its sustainability. The prophet and his followers' Khalifas all encouraged parents to educate their children and help increase their participation, which means Islamic teachings considered parents and friends as the most influential moderators or decision makers in the children and youth structures by giving these parties the responsibility to encourage healthy behaviour.

In addition, practicing physical activity, as suggested by the Islamic religion, would allow youth to reach this sort of fulfilment (Hawk, 1994). Moreover, evidence showed that religion's social sanctions against smoking, drinking and other high-risk behaviours promote health (Ellison & Levin 1998), in addition to religion's support

for healthy behaviours, such as healthy eating and physical activity (Kim et al., 2008; Kim & Koenig, 2007; Kim & Sobal, 2004). As physical activity delivers spiritual fulfilment and prevents individuals from practicing negative behaviours, religion tends to support physical activity.

> Hawks (1994) defined spiritual health as:
>
> a high level of faith, hope, and commitment in relation to a well-defined worldview or belief system that provides a sense of meaning and purpose to existence in general, and that offers an ethical path to personal fulfilment which includes connectedness with self, others, and a higher power or larger reality.

Religion's relationships with physical activity have also not been thoroughly examined. Different aspects of religiosity (attendance, importance, denomination, theology and growth) were also related to greater exercise frequency in adolescents, college students (Mahoney et al., unpublished) and working adults. However, many of these studies examined the relationship of religion with physical activity through bivariate correlations, without incorporating demographics. For example, Mormons attending church weekly were more likely to engage in vigorous exercise than those attending church less than once a week, but this relationship became insignificant when demographics were controlled. In contrast to research showing the relationship between religion and increased exercise, greater use of religious coping was associated with decreased exercise among adults. Thus, existing literature about religion and physical activity is meagre and ambiguous, in part because potential confounders were typically not examined. Different aspects of religion may also play different roles in an individual's relationship to physical activity (Kim & Sobal, 2004).

This study is an opportunity to investigate further the role of religion in determining physical activity participation. Specifically the study examines Islam, which is the world's second-most practiced religion after Christianity with 1.62 billion adherence (Pew Forum on Religion & Public Life, 2011), and which is the fastest growing faith (Spencer, 2013). The study examines how religion may increase the physical activity among youth in Saudi Arabia and countries that share similar religion.

2.4 Conclusion

Looking at studies up until 2012, this chapter summarised the literature on physical activity and provided an overview of the topic, including key definitions, Islamic history of physical activity, what is currently known about physical activity, theories used to understand why and how youth participate in physical activity, methods used to increase participation and the obstacles to this goal. All studies analysed showed that the involvement of a social norm was beneficial and the outcome was witnessed, even if slightly. In addition, it appeared that the majority of the studies were conducted in the Western context in countries such as the UK or USA, which favoured the individual point of view, followed the individual approach, and included theories such as self-efficacy and self-motivation. However, this imbalance in focus highlights a need for a new approach that focuses on both the structure and the individual. The social structural theory was thus suggested for this study to help fill the gap and understand the lifestyle of youth in a kinship society such as Saudi Arabia, where the element of structure is a key element and what individuals of this society believe is more important due to the superior influence of religion and culture on individuals. Since social influence plays a big role in Saudi society, I am interested in the relationship between individuals and in the structure

formed through individuals' offline and OSNs. These two topics are discussed further in the following chapter.

Chapter Three: Literature Review – Social Networks

3.1 Social Networks

Social networks are an element of culture, and previous studies have revealed many different definitions of culture (Belshek, 2006; Oshan, 2007); however, no specific definition of the word *culture* has achieved total acceptance in the literature (Belshesk, 2006) because each definition leads to a different understanding of human actions and activities (Oshan, 2007). According to Hofstede (1980), culture is "the collective programming of the mind which distinguishes the members of one group from another" (p. 21-23). Another definition states that culture is "a set of shared and enduring meaning, values, and beliefs that characterize national, ethnic, or other groups and orient their behaviour" (Mulholland, 1991; Dahl, 2004). It is the latter definition that is used in this research since the Saudi population has an overall high degree of cultural homogeneity (Oshan, 2007).

Saudi culture is a mixture of traditions and Islamic values, presented in a way that makes it hard to differentiate between the culture and the religion (Gallagher, 1985). Saudi Arabia is divided into many provinces, and cultural characteristics vary from one province to another (Al-Lily, 2011). According to Al-Saggaf (2004, p. 1) and Oshan (2007), "Saudi Arabia's culture is in its very nature, religious. That is, Islam plays a central role in defining the culture, and acts as a major force in determining the social norms, patterns, traditions, obligations, privileges and practices of society". The influence of Islam is reflected in almost every aspect of Saudi practice, including social and economic development (Aldossary et al., 2008; Littlewood & Yousuf, 2000), touching on topics like food, behaviour, language, and health care (El-Gilany & Al-Wehady, 2008). The reflection of Islamic values on the

Saudi people is demonstrated in relations between the family and the rest of society (Al-Saggaf, 2004; Oshan, 2007). In fact, family ties and good relationships with relatives are important connections that every Muslim is expected to maintain (Al-Saggaf, 2004; Zakaria et al., 2003). This can mean keeping in touch by visiting, offering money or other assistance, and showing kindness and respect (Zakaria et al., 2003).

The Library of Congress (2012) of the USA stated the following about the significance of family in Saudi Arabia:

> The family is the most important social institution in Saudi Arabia. For Saudis generally, the family was the primary basis of identity and status for the individual and the immediate focus of individual loyalty, just as it was among those who recognized a tribal affiliation. The structure of the family in Saudi Arabia was generally compatible with the structure of tribal lineage. (p. 20)

Sexual modesty and virtue are highly valued religious commitments in Saudi culture (Oshan, 2007). The honour and reputation of the family is dependent on these morals, which are applied primarily to women (Oshan, 2007; Al-Saggaf, 2004). Since the honour of the family is based on the behaviour of family members (Castillo, 2003), women should not do anything inappropriate that would negatively affect the family's honour (Oshan, 2007).

This belief system pushes Saudi men to control Saudi women and apply more rules and pressure regarding women's actions by restricting women's mobility and public activities (Baki, 2004; Mackey, 2002). For example, women in Saudi Arabia must gain permission from their male legal guardians to travel, hold a job, enrol in university and file a court case (Deif, 2008). Another characteristic of Saudi culture that affects women is modesty. Saudi women are expected to be shy, and shyness in

this context means to be reserved and dressed conservatively (Al-Saggaf, 2004; Oshan, 2007). Al-Saggaf (2004) suggests that shyness is an essential mechanism in Islam that is important to the whole society, as it prevents people from behaving badly. The segregation of the sexes is another important feature of Saudi culture that is applied to every aspect of life, including public and social realms. For example, segregation applies to education, banking, public transportation, restaurants, libraries and the workplace (Al-Munajjed, 1997; Al-Saggaf, 2004). According to the Islamic rules, women are not allowed to mix with men to whom they are not related (Al-Munajjed, 1997; Wheeler, 2000; Al-Saggaf, 2004; Mirza, 2008). According to Al-Munajjed (1997), "The practice of segregation and confining women to their own company is an institutional mechanism designed to regulate women, [to protect their chastity and to] prevent other men from encroaching on the male honour of the family" (p. 8).

As discussed previously, kinship societies tend to value culture elements such as networking in a group, so in order to understand the roles of the social structure and of the moderators trying to encourage youth to participate in physical activity, it was necessary to study these networks and its structures. What is a social network to begin with? In the graph theory, Scott (1988) described social networks as a graph of dots connected by lines. The dots represent people while the lines represent how they interact with each other, forming social arrangements through which resources are exchanged. According to Scott, interest in social networks has been emerging since the 1960s, as evidenced by studies of kinship structure, social mobility, science, contact among members of deviant groups, corporate power, international trade exploitation, class structure and many other areas. Interest even extended to social sciences such as physical activity and elite sports. In his analysis, Scott (1988)

focused on bridging the gap between theory and practice in relation to social networks. He concentrated on identifying the key concepts of network structure such as density, centrality, and cliques. The importance of Scott's analysis, however, is that his illustration of social networks is simple to follow, acting as instructions or a guide to anyone interested in analysing social networks. He also discussed the importance of utilising computer software to analyse a social network such as GRADAP, STRUCTURE, UCINET, and PAJEK, and he reviewed eachsoftware. UCINET, for example, received his highest rating.

Scott (1988) also explained that Granovetter's work *Getting a Job* (1974) introduced a new theory about the strength of ties and their relation to acquiring information. Later on the additional input from Granovetter on the strength of weak ties in his diffusion model which depends on the motivation of the people who have the information, and the strategic location of the person's contact in the overall flow of information (Granovetter, 1974) also supported Scott's claim.

Scott (1988) also used another example to emphasise how sociometry started to attract more researchers, as was the case with Lee's (1969) work when she investigated how women approach information on illegal issues such as abortion. She determined that women approached an average of about six before successfully contacting an abortionist. Lee, however, argued that it is extremely difficult to trace the structure of overlapping personal networks in large-scale systems. However, with the help of advanced online software and technology, this study tries to overcome this limitation.

Scott (1988) suggested the use of graph theory, which is the basic starting point for any social network. He claimed it helps to focus on explaining the pattern of connections between points (people), but not the actual positioning of the point

(person) on the page (social network). He explains that there is no one correct way to draw a graph. If the relations are directed from one agent to another, then they can be represented in a directed graph. Similarly, if the intensity of the relation is an important consideration, it could be represented by a numerical value on the valued graph. Scott also built on Wellman's work (1979, 1982) on social network density. Wellman investigated how the development of modern society had resulted in the disappearance of community and the emergence of an urban anomie. Though Wellman did not study the socio-centric networks of East York, others (Grieco, 1987) did, building on White (1970), and Granovetter's (1985) work. Grieco (1987) concluded that "the flow of help from particular individual to their network contacts produces an alteration in the global structure of the network". Scott (1988) argued that some of these links may be solidified and strengthened through feelings of solidarity and obligation. This strengthening may in turn lead to creating new direct links and a further continuity of alteration in the density and other socio-centric global features of the network.

Moving to a new feature, Scott (1988) introduced centrality, a feature that Bavelas (1950) initially investigated and ultimately used to form his star theory. The star refers to the person who is most popular in his or her group or who stands at the centre of attention. Enriching this theory further, Freeman (1979) added his betweenness theory, which is a concept to measure the extent to which a particular point lies between other points on the graph. According to Scott (1988), density describes the general level of cohesion in a graph, while centralisation describes the extent to which this cohesion is organised around a particular point. Both are complementary measures.

In addition, Scott (1988) spoke of the cliques theory, which emerged from

studies on Hawthorne and Yankee City. These studies showed that the idea of cliques was not limited to informal relations, but that it extended to political cliques, economic cliques and the like. These cliques could also be seen as sub-groups of mutually connected individuals or as a pocket of high density.

Moreover, Scott (1988) spoke about the limitations of the graph theory as discussed by Lorrain and White (1971). The first limitation is that all points and their connections are handled simultaneously rather than attention being limited to the particular lines, paths and cycles that connect them. Second, the approach does not remain with the adjacency matrix, but undertakes a combined analysis of both the rows and the columns of the original incidence matrix. People and the organisations of which they are members, for example, could be analysed together rather than separately. According to Lorrain and White (1971), the overall pattern of connections in a network must be converted into a system of structurally equivalent positions by aggregating the individual points into a larger set of points.

3.1.1 Why study social networks?

Different studies were conducted on social networks and physical activities such as the review by Foster, Hillsdon and Thorogood (2009) of 19 studies involving 7598 participants. This review showed that the effect of interventions on self-reported physical activity was moderately positive and that the heterogeneity in reported effects was lower in higher-quality studies when physical activity was self-directed by professional guidance and when there was on-going professional support. The majority of the studies reviewed were conducted using methods such as focus groups, ethnography, surveys, and one-on-one interviews. The results showed that social networks also affect and increase participation in physical activity.

In addition to modern technology and the fact that relationships today are maintained over long distances via phones, emails, and the Internet, it is unclear to what extent distance impinged contact and support before the introduction of the Internet (Mok, Wellman & Basu, 2007). Mok, Wellman, and Basu (2007) claimed that although scholars have pondered this question, they have not provided empirical evidence for an answer. Mok, Wellman, and Basu (2007), however, agree that there is a marked drop in the frequency of face-to-face interaction and that the frequency of contact will continue to decrease steadily. Moreover, they note that relationships have changed in light of new forms of communication such as the Internet and mobile phones.

This led to the study of social networks and their different forms: 1) real-life social networks where one meets another in person, and 2) online social networks (ONS) when one meets another online through a social network platform such as Facebook, Twitter, and LinkedIn. This study looks at how participants interact with one another in all both platform offline and online and comparing them to obtain a clearer image of human behaviour on a larger scale and understand what motivates participants or discourages them to practice physical activity. Some studies showed that there is a limited impact on social relationships and that Internet users have slightly larger social networks only in certain socially de-privileged segments such as divorced individuals and those with less education (Hlebec, Manfreda & Vehovar, 2006). Other studies acknowledged that studying these social networks can be used as a tool to create positive social change as it introduces knowledge of physical activity (Durbin, 2011). Additionally, the importance of studying social structure is given in the assumption that the structures might not only contain, but may also influence, human behaviour (Stokowski, 1994).

3.1.2 Types of networks

Networks are divided into four types; ego networks, dyad and triad levels, subgroups, and the whole level of the network (Scott 1988; Wellman, 1983).

When analysing a network, researchers tend to examine it from the smallest (ego network) to the biggest (the whole) to learn about the size. After analysing the size of the network based on the information the researcher collected from the participant, the next step is to measure the density of the network. The density of a network is the percentage of all possible ties in the ego network, excluding the ego itself (Prell, 2012).

In the first study conducted by Laranjo et al. (2015), the researchers investigated the use and effectiveness of interventions using social networking sites (SNSs) to change health behaviours. Their study concluded that there is a positive effect of SNS interventions on health behaviour-related outcomes, but there was considerable heterogeneity. According to their study, only seven Facebook interventions showed up (Bull et al., 2012; Mayer et al., 2012; Cavallo et al., 2012; Napolitano et al., 2012; Valle et al., 2012; Young et al., 2013; Foster et al., 2010) and one using Twitter (Turner-McGrievy & Tate, 2011). This could be because Facebook was launched years before Twitter, so people were used to it and more familiar with its features and functions in more of a closed or private and personal groups.

Laranjo et al., (2015) explained that behavioural weight-loss research programmes can be an effective way to help people lose weight, but they are time and resource intensive and difficult to disseminate. Additionally, many people felt that participation in face-to-face weight-loss interventions was time consuming and often inconvenient (Sherwood et al., 1998).

To study a network, one must define the type of network presented and the properties to address. To begin with, there are two types of networks: complete and ego networks. Complete networks are where all actors in the network are already known and then the ties linking the actors together are measured (Prell, 2012), but for many social settings, it is difficult to know all the actors beforehand (Wellman & Berkowitz, 1988).

3.1.2.1 Social networks analysis (Level one)

Ego networks refer to networks that are defined as they are perceived and reported (Wellman, 1983), and this is the type of network upon which my research is based. In ego networks, each respondent is the centre of his or her own network; the immediate contacts are called alters. In the study of ego networks, the focus is on understanding how egos make use or are influenced by their respective alters, which is why this type of network was chosen as the focus of my study.

Moreover, the third property in analysing an ego network is structural holes. This property is attributed to Burt (2005), and it discusses how certain network structures can give individuals a strategic advantage over others. Burt (2005) referred to it as "the empty spaces in social structures" (p. 16). These empty spaces, he argued, result from actors not having a tie between them. For example, consider Female A in a network with four alters, and Female B in a similar network. If the women's alters are not connected to each other directly, this is an example of a structural hole. Meanwhile, if only Female B's alters are connected, there are no structural holes. Here, Burt argues that Female B will have more advantages because the information in Female B's network becomes redundant when many of the same actors have ties with one another, as the women will turn to one another for advice and hence, their information will be similar. This is a case that seems to occur in the Saudi context

where men and women are segregated in schools. Closed networks of women in schools, especially in private schools, tend to develop, as the students usually come from conservative and/or extremely religious families; socialising is not welcomed. Hence, they remain in their small networks. However, this separation changes when they reach university level, where they make new friends who come from different backgrounds and have different points of view (Burt, 2005).

Structural holes are visible in Saudi social networks. Most of the intermediate and high school students were brought up together and then completed school together, so their knowledge is usually the same. They rarely face anything new, and their ideas are usually similar; however, when they enter university, their networks start to expand as they make new friends as they become open to new influences.

Then comes the broker property of an ego network. Gould and Fernandez (1989) identified three types of brokers: 1) the representative broker, who links two groups and negotiates and represents interests between the alters in these different groups; 2) the gatekeeper broker, who gathers and processes information from one group to another group; and 3) the liaison broker, who can simultaneously be a representative or gatekeeper broker, but plays a neutral role.

Last but not least, homophily refers to the social situation of actors preferring to have social relations with others who are similar to themselves (Blau, 1977; McPherson et al., 2001). This property seems to create a chicken and egg situation, as there are two arguments concerning its visibility. The first -organisational settings - states that ties form with similar actors (Coleman et al., 1981; Feld, 1981, 1982). The second argument is that actors are drawn to form ties with others who are like themselves (Skvortez, 1985, 1990). Because I am interested in the role of the structure, but from the point of view of the agency, I followed this second argument,

starting from the micro level and then transitioning to the macro; this process is why I chose the ego network. Prell (2012) suggested a simple method to calculate homophily: count the number of ties in the ego network that are homophilous – the ties where ego and alters all share the same attribute – then divide this number by all the ties in the ego network. If all the actors are, for example, men, they will be similar in gender, which is a homophily.

3.1.2.2 Social networks analysis (Level two)

Moving on from the ego networks, there are also dyad and triad levels. While an ego network consists of one actor, the dyad consists of two actors, and the triad consists of three actors in addition to the ties linking these actors together (Prell, 2012). According to Prell (2012), the more frequently two actors interact with each other, the more opportunities they have to influence one another's attitudes. Thus, the frequency of interaction positively correlates with similarity in attitude.

3.1.2.3 Social networks analysis (Level three)

In addition to the ego network, dyads and triads, there is a subgroup level in a network that refers to an area of a network larger than the dyad and triad, yet smaller than the entire network. Additionally, a cohesive subgroup is a subgroup that shares strong, direct, mutual, frequent or positive ties (Wasserman & Faust, 1994). Although the notion of cohesive subgroups is intuitively easy to understand, measuring cohesive subgroups is not always straightforward.

3.1.2.4 Social networks analysis (Level four)

After following the structural concept to analyse a network, and moving from the individual level, where there is one actor, the dyad, triad and subgroups levels now remain the whole level of network analysis. To analyse this level, a triad census

needs to be conducted. This type of census has been shown to link the micro-level structures to global ones, i.e., by uncovering lower-level structural tendencies, one can learn something about the network as a whole (Prell, 2012). In this study, there are two important considerations. First, there is the extent to which a network stays together versus the extent to which a network breaks apart.

Structural equivalence is a means of assigning actors to positions and deriving a role structure for a network can be an accurate reflection of many social phenomena. A mother and father, for example, are structurally equivalent and play the same role of parent to their children. Structural equivalence relies on exact ties to exact others; however, it is a bit strict, and often does not reflect the many ways social positions and roles operate in everyday life (Prell, 2012).

3.1.3 Social network structural theory

Social network theory, as explained by Borgatti, Mehra, Brass and Labianca (2009), studies networks and provides an answer to a question that has preoccupied social philosophy since the time of Plato, namely, the problem of social order: how do autonomous individuals combine to create enduring, functioning societies?

This study follows the Social Network Structural (SNS) theory (Stokowski, 1994) in particular, which investigates the relationship between the agent and the structure through various criteria including the exchange of resources such as emotional support, financial support, providing facilities and services, and providing information. These areas comprise the focus of the present study. This theory helps identify key moderators by encouraging or discouraging healthy behaviour, such as participation in physical activity, in a network.

This study draws from three studies that contributed massively to the theory: Scott (1988; 2012), the first to analyse the field intensively, Degenne and Forse

(1999) and Stokowski (1994). Degenne and Forse (1999) are credited with introducing many new, interesting elements, mainly those focusing on the structural analysis, which serves the purpose of this study, i.e., to examine the structure of social networks in the youth demographic. Degenne and Forse adopted the SNS theory and added that individuals act to achieve goals by choosing between options selected according to their interest; however there is a holistic nature which includes that structures determine individual action as touched upon previously in a discussion about Granovetter (1985), who wrote about the over-socialising theory, and Burt (1982), who wrote about normative theory where actors' interests are determined endogenously (through a member's dependence on his group). Consequently, Degenne and Forse (1999) constructed the idea of holism and summed it up into three propositions:

1. Structure takes precedence over the individual;
2. Structure cannot be reduced to the sum of individual actions;
3. Structure exerts absolute constraint on individual action.

Degenne and Forse (1999) argued that these propositions could be open to several interpretations. First, holism assumes individual actions are completely governed by the internalised norms of a group, which the individual acquires through socialisation.

The previous interpretation can either strengthen or weaken ties between the agent and the structure. To understand social networks and physical activity from a developed way of thinking, I adopted Stokowski's theory (1994). Stokowski is a leading researcher in linking social networks with leisure and physical activity. Her main focus is dedicated to structural approaches in leisure, which makes her work the most applicable to this study. She especially elaborates on feminist theories, which are adopted in this study during the analysis of the participants' interaction and

behaviour in a social network. Since the mid-1980s, feminist leisure theorists have been concerned with exploring the gendered dynamics of leisure experience (Deem, 1986; Green, Hebron & Woodward, 1990; Henderson, 1994a; Henderson et al., 1996; Wearing, 1998; Wimbush & Talbot, 1988). Some found it particularly difficult to address the neglect of context, referred to by Stokowski (1994) as linking the macro with the micro, structure and agency. In leisure studies, feminism has been used as a framework to analyse topics such as the differences in the use of leisure spaces by women and men (Lloyd, Burden & Kiewa, 2008), leisure motivations, leisure constraints (Arab-Moghaddam et al., 2007; Liechty et al., 2006), gender identity formation (Lewis & Johnson, 2011), leisure as a coping mechanism (Taylor, 2001) and many other topics in which differences of power might occur.

Researchers also spoke about the Small World Problem, which dates back to the 1960s. To address it, they suggested various strategies (Kochen, 1989). First, it is important to ask to what degree does every member of a given group know every other member. Milgram's (1969) experiment made a breakthrough when he established that the average distance between individuals in a mass society was about five people. Kochen (1989) confirmed this finding to be relatively stable.

The authors refer back to Granovetter's (1976) work and claimed that the question "How many people do you know?" has little sociological meaning. Degenne and Forse (1999) claimed too that this question becomes meaningless if detached from the method used to obtain a list of names from respondents. Epstein's (1969) study was the first of its kind as he joined and followed a single respondent around during all his weekend trips to list all his contacts. He was trying to prove that an African villager was not necessarily isolated in the city, and that Epstein too found a healthy numbers of contacts.

Degenne and Forse (1999) also suggest several methods used by researchers such as Granovetter (1976) who went on asking respondents to recognize specific persons. Killworth and Bernard (1978) limited the people to those who would do one a favour.

These approaches, the authors argued, do not give a deadline or instruction on how to establish a contact, nor is anyone asked about the nature of links to the people they cite. "This type of questioning will not teach us any more about personal relations," Degenne and Forse (1999) claimed. That is why there is a need for a more developed approach to investigate the topics these individuals discuss and observe the exchange of resources between them to learn about the strong and weak ties between them.

The favourability of sociometry among many researchers continues, as the authors here point out. In particular, in Moreno's (1934) work one must bear in mind his maxim: Sociometry is a science of action that turns passive respondents into active researchers who participate in both the experiment and data evaluation.

Degenne and Forse (1999) also argue that the aspect of sociability studies focuses on the form, function, and content of relations. Sociability is either formal (organised) or informal (spontaneous). The first type of sociability operates within an organisation such as school, while the second operates in an unestablished setup such as around a coffee table or a bar counter. Sociability could also be collective or individual. It could be of weak or strong intensity and could be between elective or affinitive relations. Sociability generally decreases with age, especially after age 40. Degenne and Forse also agreed, the higher the social status, the greater the level of sociability with job contacts, friends and acquaintances. They argued that French blue-collar workers' reputation for intense sociability as a strong subculture does not

stand up to scrutiny. The researchers' fourth finding was based on an indicator of internal or external sociability, which expresses physical or symbolic distance to the household (Forse, 1981a). Degenne and Forse (1999) claimed that mutual help is a complex form of sociability. It is supposed to meet a recipient's need, but meeting the need does not attenuate social inequalities – it reinforces them. They also introduced the features of homogamy and homophily and how' birds of a feather flock together'. They spoke about the elements of stress and weather. In addition, they discussed social capital in depth.

Degenne and Forse (1999) also spoke about the diffusion of innovations, such as new technologies and fashion, throughout an industrial society which requires the researcher to place himself in the position of the user, understand her tastes and preferences, before trying to determine if the aggregate of choices follows a pattern. Gabriel Trade (1985) was the first to research this area through his work on how people imitate their fellow beings, but it did not gain traction until Bryce and Neal Gross' work followed in 1943 with their experiment on the diffusion of hybrid corn in Iowa farming community. From the authors' point of view, when defining a group, one may consider three principles: cohesion, identity, and the complementary role. Some circles operate on all three principles; others operate exclusively on identity.

In time, the field of social networks expanded to include leisure and began to draw the attention of many researchers. Stokowski, for example, developed several significant theories. According to Stokowski (1994), leisure is commonly defined as either an attitude or feeling of freedom, a kind of social activity, or a specific time period. She referred to West's (1984) claim that the diffusion of rapidly growing recreation fads was a non-random process stimulated by mass media and advertising, influenced by high-status strata (high education, high income) and lower strata and

driven by status-seeking behaviour. West observed that social influence occurs primarily within the same or closely adjacent status groups, and that influencers tend to have the same or slightly higher status than adopters.

Stokowski (1994) also analysed feminist theories in depth and how they gained prominence in literature. She gave the example of Henderson and Rannells's (1988) work, which concluded that women found meaning and leisure through integration of work, family and community experiences. Women do not separate the categories of work and leisure. Exchange theory has hence been proposed as a way to explain people's decisions to cease participation in leisure activities (Searle, 1991).

Stokowski's (1994) analysis pointed out the importance of the voluntary aspect of leisure. She claimed research on this aspect confirms that leisure experience is not based only on primary group membership (Heywood, 1988; Hoggett & Bishop, 1985; Pine, 1984) and that volunteer involvement builds meaningful communal affiliations during leisure. This is because students will be volunteering most probably to earn better marks or to become researchers themselves.

According to Stokowski (1994), there must be a three-part research imperative to study leisure. First, researchers need to study leisure not only as an object but also in the context of social experience within which social processes develop. Second, it is important to account for time as an element in the social context of leisure in that behaviours and meanings of leisure have both a past and future coherence rather than simply an onsite performance. Third, there is a need to shift attention away from characteristics of individuals or groups as the unit of analysis and focus on the characteristics of social relationships between people.

One of the approaches of Stokowski's (1994) analysis is micro-macro linkages. She pointed out that one of the tasks of sociological research is to describe

more completely the intersections between micro (relational) and macro (structural) levels of social organisation. How is it structural? She argued that it is because structural research seeks to explain the patterning of interactions across systems in their entirety. Structural research attempts to understand how actors vary and manipulate their relationships in order to create structures that optimise their goals. Moreover, structural research examines the relational patterns resulting from intentional and unintentional actions in an effort to predict how the arrangement of elements within and across social systems influences the behaviours of contributing social actors.

The types of relationships in leisure include, first, leisure relationships described as being affective and pleasurable in nature and involving exercise of freedom of choice; second, effective relationships in leisure tend to be organised informally and weakly institutionalised in social life (Stokowski, 1994). Third, leisure may be hypothesised to involve specifically non-instrumental social relationships. However, Stokowski (1994) concluded that relationships in leisure should not be defined as either instrumental or non-instrumental. Rather, it could be hypothesised that a continuum exists between the two extremes, and leisure behaviours may arise when predominantly non-instrumental aspects of any kinds of relationships are enacted.

According to Stokowski (1994), "The Macro-level structures of relationships, meanings, and behaviours, composed of micro-level relational patterns of people involved in particular leisure pursuits, may provide researchers with information about the significance of leisure across society" (p. 48). She summarised three levels for structural perspective in leisure: first, the individual level, where leisure is experienced; second, the community level, where individuals stand in relation to

diverse sets of others; third, the society level, where leisure services are provided.

According to Degenne and Forse (1999), today's structural analysis is well into the third generation. Their assessment indicates that nothing new was added until the 1990s, when technology advanced and computers enriched this field as software development mushroomed. In addition, the OSNs of the 2000s and the virtual world are becoming easier to study. Moreover, SNS theory was investigated by additional researchers such as Giddens (1976), who assessed the term *structure* as follows:

> By the term 'structure' I do not refer, as is conventional in functionalism, to the descriptive analysis of the relations of interaction which 'compose' organizations or collectivises, but to systems of generative rules and resources . . . Structures only exist as the reproduced conduct of situated actors with definite intentions and interest. (p. 127)

Wellman (1988, p. 3) added, "Structural analysts . . . study 'social structures' directly and concretely by analysing the ordered arrangements of relations that are contingent upon exchange among members of social systems." Both researchers' definitions complemented the same idea, namely that the structure holds an influential role over the actions of individuals, as explained by Stokowski (1994). However, this influence in the social structure does not have to be visible to the naked eye in order to have implications for individual or collective behaviour (Marsden & Lin, 1982, p. 9).

Seippel (2007) and Prell (2012) explained that there are two reasons for the investigation of ONS structures. The first argues that even though the topic of civil society, in general, and social capital, in particular, have been on the sociological agenda lately, sports – the largest sector of civil society in many Western nations – have only received scant attention so far. This is strange given the sheer size of the sector and the importance of sports for many individual's everyday life and because

sports represent a type of voluntary organisation considered especially important in the social capital debate. Seippel (2007) investigated sport as one of many voluntary organisations, and the theme to be addressed is sports' position, centrality, and influence in civil society. He accordingly argued that there are at least three reasons to apply a social network approach to the topic. A first general reason is that this approach captures what most of us actually see as a fundamental aspect of social life ontologically: the relatedness and/or embeddedness of human beings and social interactions (Simmel, 1955; Giddens, 1984; Emirbayer, 1997). The second reason concerns the topic of civil society and voluntary organisations more directly. Most vital characteristics of social interaction within civil society and civil society's autonomy in relation to other social institutions is exactly about relations and networks (Walzer, 1992; Taylor, 1995; Habermas, 1996). The third reason is the relational character of the phenomena of power and influence. This is clear from the fact that most definitions of power and influence address how one set of actors is able to affect other actors (Weber, 1993, p. 180). This creates a distinction between power (dependent upon coercive means or forceful sanctions) and influence, which is more based on having one's way by persuasion rather than coercion (Knoke, 1990; Warren, 2001). It becomes clear that sports organisations, at best, have influence – seldom power – and that social networks offering opportunities for communication and persuasion are prerequisites for such influence (Stevenson & Greenberg, 2000). Thus, to really understand the phenomena of civil society and to study power and influence, more is needed than just the knowledge of attributes of the actors involved; a relational perspective is perhaps necessary as well. The second researcher was Prell (2012), who explained the concept from the point of view of layering the society into levels to understand the patterns more vividly.

One may also be interested in investigating the role of social networks in making decisions and according to Passy (2003) who drew a distinction between the socialisation, structural connection and decision-shaping functions of networks in the mobilisation process. In the first instance, networks operate to create predispositions to action. Being linked to people who are already committed to a certain cause enables individuals to feel part of the collective we. At the same time, social networks often create opportunities for transforming predispositions into action; this is what Passy calls the structural connection function. People with certain predispositions will be more likely to contact organisations and come across opportunities for participation if they are connected to people already involved.

This section has shown how social network studies developed from graph theory (Scott, 1988; Forse & Degenne, 1999; Stokowski, 1994) to the broad structural level, where the exchange of resources and what is embedded takes place between the agent and the structure, as per the theory adopted from Giddens (1979). The section also outlined how social networks have been divided into levels for a wider view of bigger networks, because levels make sense from a pedagogical point of view and makes analysis of social networks more intuitive and familiar to the average reader (Prell, 2012). The previous quote is important because it teaches us how to understand the networks from the smaller concepts moving from the simple to the more complex which is the pedagogical way of learning it.

Meanwhile, to return to the debate about agency and structure which helps in framing and understanding the social network structural theory due to the fact the debate delivers at least five main points which social networks theories agree on for any structural analysis and investigations. First, both agency and structure cannot be

separated during analysis. Second, the structure has influence over agency. Third, agency is created based on what the structure provides and offers. Fourth, the relationship between agency and structure are created in patterns and regularities. Fifth, the agency-structure debate help us during the investigation on social networks, through pointing out main factors that tend to create behaviour such as healthy behaviours, including physical activity participation which is the focus of this study. The following table show how the agency and structure characteristics relate with the main features for social network structural theory through the work of the main authors who investigated it:

Table 1

The relation between the agency and structure debate, and the social network structural theory

Points/Properties	Agency and Structure Debate (Bourdieu, Giddens, Cockerham)	Social Network Structure (Scott, Stokowski, Degenne and Forse)
Role of Structure	Agency coexist with the structure	Structure takes precedence over the individual
Patterns/regularities	Agency is created in regularities based on the capacity the structure offers	The exchange of resources are created in patterns between agency and structure
Understanding PA in structures and networks	Health behaviour are regularities created due to the structure and are not uncoordinated behaviour	Leisure is one of the agencies created due to the influence of the structure
Limited role of individual's agency	Agency cannot be separated from the structure during analysis	The individual is not always responsible for his agency
Influential factors	Structural factors that affect health behaviours include age, gender, race/ethnic groups	Structural factors include (size of network, strength of ties, centrality, exchange of resources).

3.1.4 Summary

Social networks vary according to their characteristics. In this study, the main concern is youth social networks and how they exchange resources within and with their structure whether emotional, financial, cultural or spiritual to serve the goal of

increasing participation. Social networks have evolved from offline platforms, where individuals meet and communicate face to face, to online platforms as the ascent of technology has started to play a role in the lifestyle of youth in Saudi Arabia; the ascent of OSNs is discussed in the following section.

3.2 Online Social Networks (OSNs)

This section explains how social networks transformed from the offline form to the online form due to the introduction of technology and the Internet. Further, this section explains how this aspect plays a role in helping youth participate in physical activity. The lifestyle of youth started to change due to gradual changes in society and influence from the West, which encouraged them to adapt new technologies. With the advent of technological progress, youth learned how to socialise in a different way. Though religion and culture influenced this movement, technology has been rapidly progressing over the past ten years. Though some of the religious sectors in the country and the Technology Commission warned in June 2013 they would ban the use of some OSNs and free communication applications according to the Saudi local news agency (e.g., SPA, Al-Riyadh and Al-Arabiya) some of it such as Viber was off, and later, in November 2015, WhatsApp free phone calls followed too. In May 2016, Facebook's Messenger calling service was also shut off. Youth, however, were always finding their way around to communicate such as finding new apps that are not banned or monitored yet. Young people's tenacity in finding ways to communicate online was significant in society especially after the boom of the petrol industry, development in fields such as technology and the implementation of the Internet in the country in 1998. Because of this, it was important to investigate the role of technology from both the social networking point of view and through the computer-assisted tools and OSNs such as Facebook, Twitter, and Instagram. This

would help clarify what role OSNs play between agency (youth) and their structure (moderators). OSNs are still fairly new in Saudi Arabia, and their role in promoting participation in physical activity is not yet defined. However, several attempts have been made and several campaigns have been launched on these platforms to create awareness and gain support from society in fields such as health, business, and education. Wellman (1996, 2001) was the first to point out how technology and the Internet created a new form of social networking.

3.2.1 Defining online social networks

Boyd and Ellison (2007) defined OSNs as

> [W]eb-based services that allow individuals to (1) construct a public or semi-public profile within a bounded system (2) articulate a list of other users with whom they share a connection, and (3) view and traverse their list of connections and those made by others within the system. The nature and nomenclature of these connections may vary from site to site. (p. 2)

OSNs are a much more recent phenomenon than the virtual world (Messinger P. R., et al., 2009). The virtual world, or virtual communities, as defined by Hagel and Armstrong (1997), are groups of people with common interests and needs who come together online. Most are drawn by the opportunity to share a sense of community with like-minded strangers regardless of where they live. But virtual communities are more than just a social phenomenon. What starts off as a group drawn together by common interests ends up as a group with a critical mass of purchasing power, partly thanks to the fact that communities allow members to exchange information on such things as a product price and quality.

Virtual communities have existed on the Internet since 1979, and the first were Usenet newsgroups, followed by The WELL (http://www.well.com), which was

launched in 1985 (Ridings & Gefen, 2004). Usenet was established to link university computing centres that used the UNIX operating system. Its main function was to distribute different news topics to participants throughout the network (Donath, 1999). The WELL was established to allow users to form conferences and discussions on different subjects based on their interests in topics such as health, art and business (Ridings & Gefen, 2004). In the mid-1990s, webpages started to shift from static to highly interactive, which helped increase communication between sites and users. This expansion resulted not only in the presence of virtual communities on the Web, but also in its rapid growth in popularity. This growth rate garnered the attention of the popular press and MIS researchers and has become a subject of study (Lee, Vogel & Limayem, 2003). Among various website categories, community sites were one of the fastest growing (Petersen, 1999; Wingfield & Hanrahan, 1999). At the present time, there are hundreds of social network sites that differ in feature and function (Aljabre, 2013). In 1997, the first recognisable social network site was launched: SixDegrees.com. The main features of SixDegrees.com enabled users to create profiles, make a list of their friends and to surf these lists of friends. It also functioned as a tool to help users communicate with each other by sending messages. As of 2001, a number of featured communities started to flourish with capabilities that allowed users to create personal, professional and dating profiles (Boyd & Ellison, 2007). Facebook is a good example and one of the most famous in the history of featured social network sites; it started as a tool allowing Harvard school students to communicate and eventually expanded to become the world's largest social networking site (Phillips, 2007; Saleh, 2014).

The introduction of the Internet into Saudi society was delayed until the early 1990s, but as soon as it was introduced, OSNs experienced dramatic evolution. Saudi

authorities continued to limit access for a period of time before it was made available to the public (Goodman, 1998; Oshan, 2007). Even today, Internet access is strictly controlled and filtered in such a way that any online activity goes through King Abdul-Aziz City for Science & Technology (KACST) in Riyadh, which filters both incoming and outgoing traffic. Moreover, substantial efforts have been made to block sites with undesirable content and services that conflict with the country's religious, cultural, legal, and traditional norms (Al-Saggaf, 2004; Wheeler, 2006; Sait et al., 2007; Al-Saggaf, 2011). Examples of this are "pornographic web pages; pages related to drugs, bombs, alcohol, gambling; and pages that are insulting to the Islamic religion or Saudi laws and regulations" (Internet Services Unit, 2006). In 2001, Saudi Arabia's Council of Ministers "issued a decree regulating Internet use which prohibits users from accessing or publishing certain forbidden content" (The OpenNet Initiative, 2004, p. 5). According to Saudi literature, the introduction of the Internet into Saudi society was extremely controversial. Some thought that it would destabilise the culture while others found it to be a valuable advantage that facilitated communication and functioned as a vehicle of innovation (Hampton, Goulet, Rainie & Purcell, 2011; Aljabre, 2013). In his study, Al-Saggaf (2006) argued that in spite of the Internet restriction in Saudi Arabia, the number of people who use social networks, including virtual communities, is increasing. In 2003, there were 1.9 million Internet users in Saudi Arabia (Al-Riyadh, 2003; Yunis, 2003), and 53 per cent of those users participated in virtual communities (JeddahNews.net, 2003). By 2011, the number of Internet users had grown to 13 million, and Internet use increased to 46 per cent of the population by the end of the year. The estimated proportion of women who use the Internet in Saudi Arabia is about 41 per cent, which shows that Saudi women are well-represented online (CITC, 2010). A large number

of Saudi Internet users also joined social network sites such as Facebook and Twitter (Al-Saggaf, 2011, p. 2). Facebook is ranked as the third most frequently accessed website (Alexa.com, 2012). In 2012, the number of Twitter users in Saudi Arabia reached 2.9 million; by April 2013, the Kingdom of Saudi Arabia was the eighth biggest user of Twitter in the world (Smith, 2013).

3.2.2 The use of mobile phones and phone applications

Based on the attitudes and perceptions of 186 university students from King Saud University in Riyadh, mobile phones are the best device to use in the learning process for students. A requirement to use them in a course, however, would deprive a small percentage of students who do not own or use a mobile phone (Al-Fahad, 2009). Mobile technologies such as mobile phones can be used to enrich students' learning environment by providing timely information. Mobile learning can also provide good support to micro learning, a new and effective way of learning (Habitzel, Mark, Stehno & Prock, 2006). It has been observed by Habitzel et al., (2006) that people can learn more effectively if information is broken down into smaller, more easy-to-comprehend units. Therefore, it is suggested here, that mobile learning is an ideal medium simply because it supports this new way of learning via the use of SMS, pre-recorded MP3 fits, and other such tools for presenting only small amounts of information at once. A survey on the use of different communication tools like PDAs, iPods and MP3 players shows that less than 50 per cent of the respondents owned these mobile devices (Al-Fahad, 2009). All respondents reported owning a mobile phone, suggesting that mobile technologies are rapidly becoming more ubiquitous and, arguably, more accessible to a large number of learners in Saudi Arabia. These results reveal the importance attached to the fact that "mobile learning will improve communication between student and teacher”. According to Al-Fahad’s

study (2009), since many youths believed in using mobiles as devices from which to learn, these devices may be argued to be an effective medium for increasing awareness of physical activity participation.

In addition to understanding how youths communicate and why they depend on their mobile phones so significantly, it is important to understand what attracts them to smartphones. Their lifestyles and their ways of communication have changed too. Using a phone is easier and more convenient than meeting face to face. In addition, having a phone with applications shared between an individual and his or her network has made communication look even more appealing and creative. Instead of talking, individuals are now posting photos and videos and sharing multimedia content with their friends, friends of friends and the world.

A study by PeerReach showed that in 2013 Saudi Arabia had the world's largest number of active Twitter users with around 31 per cent of the country's population on the network. The same study stated that Twitter is dominated by teens across the world. Only 20 per cent of Twitter users are over 30 years old. The average Twitter user is 24 years of age. The average man on Twitter is 26 years old; the average woman is 22 years old.

A local study conducted by Saudi journalist Al-Rakaf (2013) highlighted that 50 per cent of Twitter users in Saudi Arabia are under 30 years old. Around 27 per cent of users are under 40, while only two per cent are over 50 years of age. Around 24 per cent of Twitter users have a bachelor's degree, while about 14 per cent of users have postgraduate degrees. Al-Rakaf (2013) concluded that many Twitter users in Saudi Arabia consider social networking an essential and irreplaceable "artery of life."

According to another recent study by Nielsen (2015), a leading global provider of information and insights into what consumers watch and buy, smartphone adoption and its influence on the lives of people continues to grow at an exponential rate in Saudi Arabia. For example, a staggering 67 per cent of the population above 16 years of age uses a smartphone (Nielsen, 2014). This percentage is even higher among youth (73%) and with a large population under the age of 15, Saudi Arabia will remain a key growth market for smartphone makers. "Globally, youth are known to be early adopters and trend-setters. For most brands and technologies, an endorsement by the youth is a strong indicator of the future prospects of the service," said Aditya Gokhale, Executive Director Telecom at Nielsen (2014). The same study also stated that 44 per cent of Saudis used Samsung smartphones. Apple's iPhones are used by 23 per cent of smartphone owners in Saudi Arabia, followed by Blackberry, which represents 19 per cent of the smartphone market. Meanwhile, Nokia's market share has declined from 38 per cent to 11 per cent.

In addition, according to a report published by We Are Social Singapore (2014), Saudis spent an average of 4 hours and 57 minutes using the Internet daily through a desktop or laptop, while they used the Internet on their mobiles for 3 hours and 1 minute daily. The report also stated that 53 per cent, approximately 14.5 million people in the population, are using the Internet. Twenty-eight per cent of these people are active Facebook users, and 197 per cent of the population are active mobile subscribers, just over 53 million. The report included statistics on social media. Fifty-one per cent of the population were social media users, and they used it for an average of 2 hours and 48 minutes. Twenty per cent of them used location-based services. According to the report, Facebook has the highest number of active users with 1.184

million users, QQ has 816 million, WhatsApp has 400 million users, and Twitter has 232 million users (We Are Social Singapore, 2014).

3.2.3 The drive to join online social networks

The most commonly cited reason for virtual community participation is to access information (Furlong, 1989; Jones, 1995; Wellman et al., 1997). Virtual communities can be ideal places for people seeking information about specific topics (Baym, 2000; Wellman & Gulia, 1999a). These communities provide unique information generated by community members via the Internet, unlike other categories of information found on the Internet that are only provided by the site administrator (Filipczak, 1998, as cited in Ridings & Gefen, 2004). Social media are built upon a fundamental characteristic of Web 2.0, and they contain sites for harnessing collective intelligence (O'Reilly & Battelle, 2009). There are many social media platforms such as Digg, Facebook, YouTube, and Flickr, but Twitter holds particular promise as a social medium for information.

Second, people subscribe to social networks for the social support that these communities can provide (Ridings & Gefen, 2004). According to Thoits (1982), social support is "the degree to which [a] person's basic social needs are gratified through interaction with others." From the perspective of social psychology, social support provided by virtual communities may motivate individuals to join these sites (Watson & Johnson, 1972) given that human beings are social animals that cannot live in isolation (Dyson, 1998) and need to feel a sense of belonging in groups with others (Watson & Johnson, 1972). Even though people who communicate through virtual communities may not know each other, this can be a positive feature as they are encouraged to reveal more about themselves (Lea, O'Shea, Fung & Spears, 1992; Walther, 1996). Herring (1996) suggested that the main reason individuals join and

use virtual communities is not only because of the freedom to express views and feelings, but also to receive social support (Herring, 1996; Watson & Johnson, 1972).

The social support aspect of virtual communities and social networks has been addressed in many studies, identified as communities that provide emotional support and sociability as well as information and instrumental aid (Hiltz & Wellman, 1997). Examples include communities for people suffering from diseases, recovering drug addicts, and people under stress from major life changes such as job loss, death of loved ones, or divorce (Ridings & Gefen, 2004). Seeking friendship and maintaining social ties with existing friends is another reason that people join virtual communities (Al-Saggaf, 2011). Recreation and entertainment are also possible reasons (Ridings & Gefen, 2004).

The literature on social networks indicates that there are various reasons why individuals join OSNs. Reasons include developing relationships, socialising, enjoying themselves, relaxing, having fun, forgetting about their problems, killing time or expressing themselves intellectually (Al-Saggaf, 2003; Hampton, Goulet, Rainie & Purcell 2011). This variety of reasons is perhaps why people including ministers, politicians, religious scholars, social activists and youths are on Facebook and similar social networking sites.

In the past, the Internet was only a source for information (Aljabre, 2013). Because of increased interaction through social network sites, however, the Internet has become a place for social gathering (Weaver & Morrison, 2010 as cited in Aljabre, 2013). These social gatherings allow users not only to search for information, but also to share it with others in an informal setting (Aljabre, 2013).

Another effect of social network sites is the spread of freedom of speech. Gelman (2009) suggested that social network sites have eliminated restrictions on

freedom of expression and reduced limitations on what can be published; they also help individuals determine what is newsworthy. Due to the growing number of online users, and with elaborate profiles and pages that can be created in minutes, it has become difficult to control what can or cannot be said on social network sites even though most sites have policies to regulate language (Aljabre, 2013). Further, the degree of anonymity provided by the Internet has allowed those who are neglected or silenced to express themselves freely (Parameswaran & Whinston, 2007).

Social capital is often separated into "bridging" and "bonding" (Putnam, 2000; Williams, 2006); these categories describe resources embedded in different types of relationships. Ties that connect different clusters within a network are often called "bridging" ties and they help propagate novel information across groups (Burt, 1992). As explicated below, weaker ties (such as a friend of a friend) are more likely to be bridging ties and provide access to novel information (Granovetter, 1973) and diverse perspectives (associated with bridging social capital). Stronger ties, in contrast, are characterised by multiple iterative interactions and higher levels of trust, support and intimacy; these ties typically provide access to the more substantive forms of capital conversion associated with bonding social capital (e.g., a financial loan). Facebook networks contain both strong and weak ties (Bakshy, Rosenn, Marlow & Adamic, 2012). Because individuals often use multiple channels to communicate with strong ties and fewer channels to interact with weaker ties (Haythornthwaite, 2005), the focus of this study is on bridging social capital to learn how Facebook enables greater access to resources held by weaker ties, who — unlike strong ties — may not be available through other channels.

3.2.4 The use of online social networks in the Saudi context

A study conducted by Al-Saggaf (2004) revealed the strong impact of social networks in Saudi culture. Al-Saggaf maintained that social networks have a significant influence on both male and female Saudi Arabian people, allowing them to become more open-minded in their thinking, discussions and expressions. Specifically, a dramatic change in Saudi women's attitudes have occurred because of the widespread popularity of social networks in Saudi Arabia (Al-Saggaf, 2004; Al-Salem, 2005), especially in the way they see their culture, beliefs and identities. Thus, for the first time in history, Saudi women are able to freely express their ideas and thoughts and to defend their views online (Al-Salem, 2005). Given that the freedom of expression in Saudi Arabia is limited, Saudi women are well represented in online forums (Al-Saggaf, 2011) as they struggle to achieve their rights and ask for social support (Al-Salem, 2005). Such practices, Saleh (2014) contends, demonstrate the profound influence of social networks.

In addition, although Saudi Arabia has experienced increasing socioeconomic concerns, the country has remained largely free from violent public protest (Mabon, 2012). What has emerged, however, is vocal opposition from the country's young, educated and tech-savvy Internet users. As Madawi Al-Rasheed (2013) pointed out, a vast number of activist youth have migrated to virtual forums where they call for reform and even the overthrow of the ruling family. As a result, the Saudi government has strengthened its efforts to control dissent online through various mechanisms of control and regulation. The Internet has become a contested space in Saudi Arabia, where leadership can divide the public along regional, sectarian, gender, ideological and political lines to prevent dissenting voices from unifying. As Al-Rasheed (2013) noted, "In the aftermath of the Arab uprisings, Saudis seem to be engaged in internal

cyber warfare, which can only benefit the leadership" (p. 28). New social networking sites such as Facebook and Twitter, both of which played an important role in the Arab uprisings, are intensifying debates in Saudi Arabia, further polarizing Saudi society between those who want more openness in the social network sphere and those who wish to see more restriction (Chaudhry, 2014).

3.2.5 Twitter and the hashtag

Twitter, the social network site in which users communicate via tweets, or messages of 140 characters or less, has become an increasingly visible part of the media landscape. The service offers an interesting example of the convergence between old and new media and between producers and consumers (Jenkins, 2006a). This study investigates the use of Twitter hashtags related to physical activity participation created between 2012 and 2015. For many users, Twitter was considered "a broadcast medium, marketing channel, diary, social platform, and news source" (Marwick & Boyd, 2010, p. 9).

In her research, Deller (2011) claimed that using Twitter in audience research can show new ways in which part of the media audience is mobilising and interacting with the people who are making media. Twitter can help take the pulse of the public's reaction to world events, news stories and new media texts in real time as these things happen. It provides instant access to people who are often happy to communicate their thoughts and feelings in an articulate but succinct way. It can reveal new aspects of everyday talk about the media, and can also help us understand when and how something becomes a more significant media event (Dayan and Katz, 1992; Couldry, 2002).

Sundet and Ytreberg (2009), in their interviews with media industry executives, found that many were keen to use interactive methods of connecting with

the audience. Among their respondents, “The active attitude toward participating is seen as a basic and enduring characteristic of audiences, not as something new and unique to the current media situation” (Sundet & Ytreberg, 2009, p. 385). Nonetheless, digital media gave the respondents new platforms to encourage this participation. Twitter is one medium for providing this interactivity that has been widely embraced by the industry, alongside official websites, blogs, YouTube channels and Facebook pages.

Since interactivity is a concern in this research about youth and physical activity participation decision makers, public Twitter accounts allow room for investigation. In contrast, WhatsApp or Facebook would require access and permission to view the account and its history, as the content is considered more personal.

After investigating the participants of research accounts on Twitter, a trend showed their interest in using hashtags alongside what they are promoting. Why look into hashtags? Because when Twitter started in 2006 it simple based on the 140 characters, and people would just share what they were doing. Specifically, Twitter users were invited to answer the question “What are you doing?” in 140 characters or less and to follow the accounts of their friends (Burgess, 2011a). According to Deller (2011), although founded in 2006, Twitter rose to prominence in 2008 and 2009. Its adoption by high profile public figures, particularly in the US, UK and Australia, led to the dramatic increase of its user base, including many academics, political figures, businesses and media organisations seeking to utilise and understand the power and potential of this platform. Additionally, as the lifestyle changes, people started to ignore that and started writing what they felt like. Twitter had to adapt and allow new features to enhance engagement in the platform.

Among those new features was the use of the hashtag. Now any marketing agency would recommend use of hashtags for that reason. As a concept, the hashtag has its genealogy in both IRC channels and the Web 2.0 phenomenon of user-generated tagging systems or folksonomies common across various user-created content platforms by 2007; Flickr and del.icio.us were the most celebrated examples.

The use of hashtags in Twitter was originally proposed in mid-2007 by San Francisco-based technologist Chris Messina, both on Twitter itself and in a post on his personal blog, entitled "Groups for Twitter, or a Proposal for Twitter Tag Channels" (2007a). Since 2007, hashtags have proven to be extraordinarily high in their capacity for cultural generativity (Burgess, 2011b) and have seen a proliferation of application and permutation across millions of individual instances, ranging from the coordination of emergency relief (Hughes & Palen, 2009) to playful or expressive applications like memes or jokes (Huang et al., 2010) to the co-watching of and commentary on popular television programmes (Deller, 2011) and the coordination of ad hoc public issues, particularly in relation to formal and informal politics (Small, 2011).

According to researchers, when tweeting with a hashtag there is a greater chance of getting retweeted, meaning the word will be further spread and create more engagement between Twitter users. Buddy Media's research (2014) showed that the volume of hashtags bears monitoring; one or two hashtags appears to be the max. When more than two hashtags are used, engagement drops by an average of 17 per cent. Individuals can see a 100 per cent increase in engagement by using hashtags; the same bump seen in the Buddy Media study. Brands see a 50 per cent increase. Others also mentioned that hashtag format "speaks in ways a sentence can't". That is how

physical activity activists online use it to promote their campaigns. Many also add additional hashtags referring to Saudi to direct their message to that sample.

Hashtags are a helpful tool for implementing the public education tactic at this stage. When used in a communicative, informational role, hashtags serve as bookmarks under which vast, user-generated bodies of knowledge can accumulate. Hashtags thus facilitate information dissemination by categorising messages around specific topics. Organisations can use hashtags to find tweets on the same topic or help others find their tweets. Hashtags also help to decentralise public education. With information flowing through networks of users connected by formal ties as well as informal hashtag networks, new possibilities for educating the public emerge (Guo & Saxton, 2013).

There may be great material for many different research interests, but the question of how to access and select it cannot be easily answered. Sampling is therefore probably the issue most often and consistently raised in the literature on Internet methodology (Erlhofer, 2010; Mitra & Cohen, 1999; Vogt, Gardner & Haeffele, 2012; Welker et al., 2010). On websites and, to a lesser degree, social media sites, content is not as stable nor as clearly delineated as in most traditional media, which can make sampling and defining units of analysis challenging (Herring, 2010). It seems most common to combine purposive and random sampling techniques, which is what Mazur (2010) recommended. In Herring's view (2010), communication scholars trained in conventional content analysis will find they need to adapt their methodological toolbox to digital media at least to some degree. Herring pled for the incorporation of methods from other disciplines to adequately study the structure of websites, blogs, or social network sites (Christians & Chen, 2004). Scholars may find more appropriate or complementary methods in linguistics or discourse analysis. Most

big data research is based on non-random sampling, such as using snowball techniques or simply by using any data that is technically and legally accessible.

Parents exert considerable influence over the health-related behaviours of their children (Perry, Crockett & Pirie, 1987; Schor & American Academy of Paediatrics Task Force on the Family, 2003) and are one of the immediate and primary sources of health information and education (Hopper, Gruber, Munoz & Herb, 1992). In addition, parents serve a gate keeper role to physical activity (Welk, Wood & Morss, 2003), controlling access to community activities and sport programs (Atsalakis & Sleap, 1996; Boufous, Finch & Bauman, 2004) and access to outdoor environments (Klesges, Eck, Hanson, Haddock & Klesges, 1990) where physical activity can take place. Therefore, especially during childhood (from 5 to 12 years old) when behaviours are under less volitional control, parents are one of the primary providers of inhibitory and promotive opportunities whereby children can be active.

The focus of the study is to understand the role of OSNs in promoting physical activity and the exchange of resources between youths (15 to 24 years old) and those who make up the majority of the population in the country and the decision makers who influence and shape the participation of the group. Lack of physical activity among youth is a worldwide problem delivering many health risks and is caused by several factors. Some researchers related it to self-efficacy and self-motivation reasons, while others investigated the role of the structure because they believed the structure plays a crucial role too. This study investigates the role of the structure for several reasons. First, Saudi Arabia has a family-oriented nature, which indicates that the family plays a role in encouraging or discouraging participation. Second, this is a religious country where Islam is practiced by almost 99 per cent of the population and Islamic Sharia is the religious legal system, and both play an influential role in this

capacity as well. Third, since youths are up to date with technology and Saudis in particular are considered among the highest interactive society in the Middle East, this makes the role of OSNs the third important structure to investigate. In addition, according to the previous studies on the role of structure, as discussed further below in the chapter, there is an important role of friends and institutions in influencing the participation of youths in physical activity and hence they will be studied here too to understand their role in Saudi society.

Examples of the use of OSNs for support in the Saudi content:

- During the Jeddah flood in 2011, a big campaign was held through OSNs to support the victims who had lost their families, houses, money and valuables. OSNs such as Twitter were used as a tool to communicate and report updates.
- OSNs were also used to support social cases such as helping needy families, ill and sick patients with no money to pay for treatment, and prisoners who were jailed because of crossing the red lines in OSNs.
- They were also used for marketing and probably one of the most recognizable examples is when Faris Al-Turki created a hashtag for breakfast under his name and people started to post his comments and reply with suggestions until he opened his own breakfast place titled with the same hashtag (Faris Breakfast) #فطور_فارس
- Alanzi, Istepanian, Philip, & Sungoor, (2014) published a study on perception of managing diabetes mellitus through social networking in the Kingdom of Saudi Arabia.
- OSNs were also used to promote activism in Saudi Arabia in issues such as allowing women to drive (Yuce, Agarwal, Wigand, Lim, & Robinson, 2014) The researchers explained that if the user is tweeting in Arabic, that user is 96

per cent more likely to use an Arabic hashtag within the same tweet. When comparing the overlap between hashtag networks, the results show that 60 per cent of common hashtags were in English. English hashtags are more likely to bridge different clusters. While the Arabic hashtags are more likely to relate to local factors, such as effects of driving on women's ovaries, English hashtags help to promote transnational and inter-organisational support from human rights and women's rights groups, and the Women2Drive Campaign. The researchers also explained the prevalence of contemporary forms of information and communication technologies (ICTs), such as social media, and how they have fundamentally altered how people coordinate and mobilise leading to manifestations of collective actions in various forms.

- Yeslam Al-Saggaf, a specialist in OSNs in the Middle East including Saudi Arabia, investigated several factors including the use of OSNs in natural disasters in Al-Saggaf, & Simmons, (2015).
- Supporting divorced Saudi women through OSNs (Saleh, 2014). The author claimed that social networks helped reduce the negative impact of divorce among Saudi women and the most significant role of support provided by social networks is the increase of awareness about divorce issues (Saleh, 2014). Saudi society started to deal with divorced women differently as a result, and gradually showed some acceptance by reducing the stigmatisation of divorced women. Those who suffered as social outcasts were able to make new friends and achieve a sense of belonging. Those who had been subjected to abuse by former husbands found that social networks made it easy to communicate with their former spouses and children without needing to be in the same physical location (Saleh, 2014). As for financial security, social

networks helped women increase their income after divorce by searching for and finding suitable jobs, or even by buying and selling products online. Social networks helped divorced women overcome psychological issues by reducing regret and remorse, illuminating the emotional vacuum, raising self-confidence, and overcoming depression and frustration. It allowed them to meet with new people and share and exchange experiences. In terms of legal issues, the only remarkable support that social networks provide to divorced Saudi women is their increase in awareness of women's legal rights in divorce. No remarkable support was found in other aspects of legal issues, and that may be because legal issues are regional customs of traditional family laws in Saudi society, which cannot be modified by the public. Such issues need to be solved in the physical realm first (Saleh, 2014). In conclusion, social networks may be supportive for divorced women caught in socially, emotionally or economically problematic circumstances, but not for those who experience difficulties due to the legal issues surrounding them (Saleh, 2014).

3.2.6 The influence of online social networks on Saudi culture

As segregation between the sexes is obligatory by law and culture in Saudi Arabia, it is difficult for women to mix with unrelated men in public. Social networks made it easy for Saudi people to bridge the public and private division of society. They are able to communicate beyond gender restrictions while remaining physically segregated (Al-Saggaf, 2004), with or without permission of their male guardians (Al-Saggaf & Weckert, 2004; Sait et al., 2007). As a result, it helped both sexes explore the characteristics of the opposite gender in a way that made them less inhibited and more appreciative of each other (Al-Saggaf & Weckert, 2004). Thus, social network sites have increased the self-awareness of Saudi women and made them less naïve

about the outside world, giving the women self-confidence and self-esteem through their experience in online communities (Al-Saggaf, 2004). Social networks can also have a negative impact on Saudi women. Women may neglect family commitments and become extroverted (Al-Saggaf, 2011). The significance of family ties in Saudi culture must be taken into account as it is a crucial characteristic of the Saudi identity, and consequently, wasting time on virtual communities and social networks could be harmful to the structure of the family (Zakaria et al., 2003; Al-Saggaf, 2004). Shyness is an important characteristic of Saudi women as well (Al-Saggaf, 2004; Oshan, 2008; Al-Saggaf, 2011), and with OSNs, Saudi women often become less shy, more talkative and outgoing (Al-Saggaf, 2004). Another considerable influence is exposure to ideas and views that are against religious and cultural values, such as obscene references, pornographic materials, anti-Islamic material or criticism of Saudi Arabia (Al-Saggaf, 2004; 2011). Exposure to such content may affect Saudi women's morals and could make them intellectually confused, spreading cultural beliefs and values that contradict Saudi culture (Al-Saggaf, 2004). Additionally, Saudi women are subject to sexual coercion by criminals due to self-disclosure in these communities; the personal information of Saudi women, such as photos and sensitive data could be harmfully used by others and result in serious damage to the family's reputation (Al-Saggaf, 2011). Al-Saggaf (2004) suggests that Saudi society should avoid the negative influence of this technology by educating, training and raising awareness about the potential danger of such communities and to continually uphold the cultural and religious values and norms of Saudi society in order to benefit from this technology.

3.2.7 Examples of the use of online social networks to increase physical activity participation

The use of OSNs to increase participation in physical activity is still new and though decision makers in the field are encouraged to use OSNs to promote physical activity participation and awareness, until now there have been no studies on a strategy. Available studies have investigated the use of OSNs as a tool of entertainment, marketing or support in social activities, but have not included physical activity participation except for a few examples. However, the attempts inaugurated by men were welcomed by a larger number of followers than the accounts launched by women. It is important to mention that making such a comparison is difficult due to various factors including the majority of women's accounts being private on OSNs, which is a feature that prevents societal attack against their involvement in an activity dominated by men for cultural and religious reasons. Women tend to open their accounts only to their closed networks and to other women they trust and with whom they share similar interests. Men, however, find it easier to open their account and publicly support their initiatives because the culture in Saudi Arabia is male dominated and men are expected to be vocal.

Examples where online social networks was used to promote physical activity:

- An interactive hashtag titled #MizanHealth was launched in May 2012 through a team of medical students to promote healthy lifestyle and physical activity and has around 63.3K followers to date.
- Another interactive account on Twitter is Saudi female Rawan Zahran's @RawanFZ, A Fitness Trainer ISSA Student (P90X, Insanity, Asylum graduate) Creator of SWEAT circuit training, ViPR live certification,

STC&GSTC certification. This account was launched in October 2010 and has around 1. 3K followers.

- Another initiative was run by Dr. Salih Al-Ansari who created a hashtag called #HealthyWalking in April 2013 but it did not reach more than 368 followers on Twitter. However, his own account, which is more interactive and was created in August 2011 now has 55.6K followers. He also created the Health Promotion Centre @SaudiHPC and offers advice based on his specialty as a family doctor. The latter account reaches 25.2K followers.
- Jeddah cyclists and how it attracted many participants not only in Jeddah, but grew bigger to include many cities across Saudi Arabia.

3.2.8 Summary

This section explained the transition from offline social networking to online social networking and how it parallels the changes of lifestyle of youth and develops until the introduction of the online platform. In addition, it explained the role of the online platform for social networking among youth with regard to their participation in physical activity. Finally, this section explained examples where OSNs helped certain social initiatives in Saudi Arabia, particularly why OSNs were identified as a topic of prospective study. This section aimed to rationalise the online interests of youth and understand the relationship between them and their structure and the role their structure plays in shaping youth attitude and actions with regards to their participation in physical activity.

3.3 Conclusion

This chapter concentrated on the development of social networks from offline platforms to online platforms based on the changes of lifestyle, which were encouraged by the use of technology and OSNs. It explained how OSNs became the

primary mode of communication, voice expression and exchange of information and consolidated resources. The chapter also explained how OSNs have replaced many between youth and how, through the use of personal devices such as mobile phones in particular, youth are now enjoying more privacy and easy access to their friends and information. The chapter elaborated on the role of social network structural theory, which helps in understanding the patterns appearing in social networks. The theory indicates how OSNs became a crucial tool to investigate when trying to understand the relationship between the agency and the structure of youth and how such communication through the online platform could influence youths to participate in physical activity. The following chapter explains the methodology chosen to investigate OSNs with respect to their capacity to increase physical activity among Saudi youths in addition to the influence of physical activity decision makers, in particular the ones who provide the rules and regulations in the country. These decision makers must be reviewed, as they are key to facilitating the participation of youth in physical activity through venues, financial support, information and access.

Chapter Four: Methodology

4.1 Introduction

This chapter introduces the research methodology based on the social network structural theory (Degenne & Forsé, 1999; Stokowski, 1994) and explains how the methods chosen to collect and analyse the data meet with the objectives of the study. The chapter also elaborates on the link between theory and practice through the theoretical framework adopted in this study. The chapter provides a detailed outline of the study's sampling techniques and gives a justification for selecting diverse participants.

The previous literature review chapter examined Saudi youth participation in physical activity through insights into their lifestyle in the family oriented structural context of Saudi Arabia. The traditional structure and the strong ties in Saudi society persist. Youths' social networking has gone from offline to online through technology and Internet-assisted communication tools, such as Facebook and Twitter. However, this has not meant letting go of their traditions, culture or face-to-face social networking. In fact, this transformation has helped bring more male and female youth together to practice physical activity. Different factors have played a role in influencing youth to participate in physical activity. Bearing in mind the research paradigm and philosophy of my research, I selected appropriate methods to determine how specific factors affect youth participation. Defining the research philosophy clarified the ontology, epistemology and methodology of the research. The following section elaborates on the research design, including the research philosophy, research approaches, research strategies and data collection methods.

Studying the social world from the viewpoint of individuals is reflective of a more traditional approach to the social sciences, and it is more intuitive and familiar

to the average reader. Thus, beginning the study of networks with individuals, and then building up to higher and higher levels of structures, makes sense from a pedagogical angle (Prell, 2012).

4.2 Research methodology

To meet the objectives of my study, I followed several steps, starting with selecting the most appropriate approach, paradigms, research strategy and methods, to achieve the study's main concerns. For the reasons outlined below, I chose to adopt the interpretive approach.

4.2.1 Research approach

A key rationale for adopting an interpretive approach is that itrecognises stakeholders' perspectives; recognition of this perspective is an acknowledged facet of interpretive evaluation (Guba & Lincoln, 1989; Walsham, 1993), and it does not confine the evaluation to one group.

4.2.2 Research design and theoretical framework

Crotty's (1998) ideas established the groundwork for this interpretive approach. He suggested that when designing a research proposal, we should consider four questions: Firstly, what epistemology – i.e., what theory of knowledge (e.g., objectivism, subjectivism) – informs the research? Secondly, what theoretical perspective – i.e., what philosophical stance (e.g., objectivism, subjectivism) – lies behind the methodology employed in the research? Thirdly, what methodology – i.e., what strategy or plan of action linking methods to outcomes – governs the choice and use of methods (e.g., experimental research, survey research, ethnography)? Fourthly, what methods – i.e., what techniques and procedures (e.g., questionnaire, interview, focus group) – do we propose to use? Table 1 summarises the research

strategy through clarifying the link between theory and practice method.

Table 2

Research strategy: Link between theory and method

Structural Social Networks Theory	Main Analytical Tasks	Information Needed	Interpretive Methodology	Selected Methods
Agency	Examine youth agency and youths' role in society	Agency lifestyle, studies related to participation in physical activity	Qualitative/ Quantitative	Semi-structured interviews, online survey & observations
Structure/ Factors/ Moderators	Analyse the role of different structures/factors (e.g., religion, family, friends & peers, schools, sport organisations & technology) in youth participation in physical activity	Data on how these factors operate and are structured, and the relationship between them	Qualitative/ Quantitative	Semi-structured interviews & observations
Interactions	Understand & analyse patterns of interactions between agents & structure	Forms and frequencies of interactions between agents & structure	Qualitative/ Quantitative	Online sports organisation websites monitoring (digital ethnography) & observations
Outcomes	Develop the structural outcomes of particular interactions	Research and evaluation of different agent/structure relationships	Qualitative/ Quantitative	Mixed methods outcome analysis

4.3 Research sample

This section introduces the sampling procedures followed to select participants, and it provides a justification for each sampling technique. The sampling techniques in this section are informed by the social networks structural literature, which is discussed at more length in the following sections in this chapter.

To gather an ego network data, a set of respondents are sampled in a given ego network. Usually sampling employs either random sampling techniques or snowball sampling techniques. Participants are then asked name-generator questions and/or other questions. A name-generator question is one designed specifically for the purpose of generating a list of names according to a particular social relation. In this research, the snowball sampling technique was adopted. Snowball sampling is when participants are chosen to fit certain categories until all categories are met (Biernacki & Waldorf, 1981; Ortis & Santos, 2009). That is why snowballing was used for the youth participants, decision makers at the GAS, and the online social networks activists. It was done based on the suggestions of the officials or decision makers who have direct contact with them such as a PE teacher, a supervisor, and officials who knows them enough to qualify them for the study and ensure my access to the participants. This also indicates it was based on the characteristic of social network analysis where the central individual may link to another or act as a bridge between other individuals and structures, such as decision makers.

Firstly, the youth were divided according to the type of educational organisation to which they belonged in Saudi Arabia: public, private and international. To frame the snowball sampling boundary, participants were limited to the western region and Jeddah specifically, as this is my city and it was convenient for me to visit and meet with these youth for the interviews. The three types of schools were selected because they provide different education based on the curricula. For example, while both the public and private schools segregate between men and women, the private schools offer more English and allow women to participate in physical activity. The international schools, do not segregate between genders, offer English and a few Arabic classes and provide physical activity for both genders.

The interviews were set to target both sexes from the age of 15 to 24 throughout three levels of education: intermediate, high school and undergraduate. Each participant category was divided into two groups, one from each gender. Each participant was interviewed separately in a location convenient for him/her. Though focus groups are recommended in qualitative studies, it was difficult to gather these groups even after two visits to the city. I sought counsel from several researchers in the field in Saudi Arabia and from several academics, including Prof. Hazza Al-Hazza, who had extensively researched similar subjects related to physical activity and youth in the country. It was suggested that instead of focus groups, I should conduct one-to-one interviews and choose two representatives from each category: a male and a female participant. The suggestion was based on the fact that Saudis do not feel at ease in front of their peers and so are less likely to open up and share their real views when in focus groups.

4.3.1 Research sample

Given that the aim of this study was to understand the relationship between agency and structure and the exchange of resources between agency and structure, it was important to clearly distinguish between the agents and the structure that surrounds their participation in physical activities. Youth were the main agents for my study. Following the Saudi Arabian definition of youth, the age group included individuals from 15 to 24 years old. To examine the structure surrounding youth in relation to physical activity, I investigated several moderators surrounding youth, namely parents, schools, the General Presidency of Youth Welfare, the Ministry of Education and physical activity activists in online social networks.

Several sampling decisions had to be made regarding the data collected. Because of the mixed method nature of the study, it was crucial to clarify the depth

and breadth in the data collected for this study. Since Saudi Arabia is divided into 13 districts, each with its own unique nature, culture, tradition and lifestyle, it is important to note that the data elicited from the interviews is not generalisable to all districts. However, general insights on inter-cultural differences are elicited from surveys across Saudi Arabia. The ten semi-structured interviews were conducted with men and women from different schooling backgrounds (e.g., public, private and international schooling backgrounds) in Jeddah. Because the research focuses on the role of structure, participants had to be carefully sampled at the structural level as well. Interviews were conducted with the physical activity decision makers and providers in Saudi Arabia to examine how these individuals communicate with youth in an effort to increase the participation of youth in physical activity. The most influential structure surrounding youth is the home, but school and sports organisations also became points of focus in this study. In addition, physical activity activists on online platforms were also interviewed to meet the study's aim to investigate the role of technology in increasing and promoting physical activity participation.

The following four categories are the structures chosen for investigation in this study.

1. The Ministry of Education (MOE) officials: Three MOE officials who supervise and are responsible for the National School Sports Strategy (NSSS) under the umbrella of the MOE were interviewed, as well as one officer in charge of Public Relations (PR). (Three officials, one PR officer = 4).

2. The General Presidency of Youth Welfare (GAS): While choosing the federations to interview, I had to ensure that each sport was accessible to both men and women through the private schools. Based on the NSSS (2011) plan to implement

five sports (e.g., athletics, football, basketball, swimming and karate) in schools, I had to limit my choice of sports. I chose one from individual sports (athletics) and one from team sports (football). Both sports are popular among men and women. However, at present, public schools for women do not have physical education classes. Women practice sports only in some private schools or in gym/fitness centres. Nonetheless, Saudi Arabia already has around 20 female football teams, and in 2012 the country sent two female athletes to the London Olympics (one in athletics and one in judo), marking the first time female Saudi representatives had ever attended. I also chose the Equestrian Federation because it is one of the very few federations that promotes its activities through technology and social networks and actively encourages female participation. Another reason for choosing the Equestrian Federation is its close links with the country's religion, culture and heritage. Swimming is also related to religion, and I have chosen this federation because of its reputation in promoting sport and supporting its athletes' efforts to enhance their academic attainments by, for example, sending the athletes abroad to continue their education while training. In addition, families also choose basketball because of its popularity, which is greater than that of football, among female private schools, and acceptance for their daughters (Five officials, Five PR= 10). Table 4.2 depicts the two stages of interviewing, i.e., the structural and individual levels.

Table 3

Structural or individual level interviews

	Stage One Structural level (29)	Stage Two Individual level (10)
Sample	Twenty-nine semi-structured interviews with the physical activity decision makers in Saudi Arabia, including the General presidency of Youth Welfare (GAS), the Ministry Of Education (MOE) and physical activity activists in online social networks. Interviews with parents conducted by the Saudi National Schools Sports Strategy (NSSS).	Ten semi-structured interviews with Saudi youth from both sexes from five different schooling backgrounds in Saudi Arabia, namely from public schools, private schools, international schools, public universities and private universities. A quantitative online survey of 110 youth distributed through online social networks.

Table 2-3 depicts the sample chosen from the GAS, which included five Saudi sports federations.

Table 4

Sample from the general presidency of youth welfare

Criteria/Sports	Athletics	Football	Basketball	Equestrian	Swimming
NSSS Plan	X	X	X		X
Type of sports (individual vs. team sports)	Individual	Team	Team	Individual	Individual
Accessible to M/F public schools	X				
Accessible to M/F private schools	X	X	X		
Linked with the country's culture and religion	X			X	X
Advanced in using technology		X		X	
Promotes sports and academic attainments	X				X
Highly practiced by women (private sectors)		X	X	X	

3. Parents as direct influencers: Given the primary role and strong influence of family in the degree or extent of participation in physical activities, it was necessary for me as a researcher to elicit family members' views and perspectives on the topic. However, given the conservative structure of the Arab society in general, and Saudi Arabia in particular, it was difficult for a sole female researcher to interview parents, particularly fathers. In this Saudi societal context, which is known for its conservativeness when it comes to gender mixing, it is a risk to interview male participants outdoors (Feghali, 1997). Yet, I decided to rely on secondary data gathered by the National School Sports Strategy (NSSS) in 2011 on a large number of parents across Saudi Arabia. Instead of analysing this large data set given the limitations of time and the number of variables included, I referred to the study to gain a general overview of parents' perspectives on the topic.

4. Physical activities activist: These activists are considered as influential due to their OSNs high interactivity with youth, which the online survey identifies as frequent (between six and eight).

Identifying the role of technology and OSNs in promoting youth participation in physical activity was pivotal to my study's objectives. Therefore the following open-ended question is directed to all participants: however the sample of the semi-structured questions was directed to decision makers depending on the institution they represented and included the open-ended question: 'From your point of view, what is the best way to promote physical activity among youth?'

My general aims for interviewing participants across different structures were the following:

- To determine to what extent social networks, both off and online, shape young people's participation in physical activity.
- To identify young people's communication strategy, and to determine whether that strategy includes communicating with other youth through OSNs and promoting physical activity participation through OSNs.
- To understand to what extent decision makers are up to date with technology.
- To determine whether key structural entities use technology to promote participation in physical activity.
- To determine whether the various structures surrounding youth communicate and how those structures promote participation in physical activity.

Additional sampling choices and their justification:

- Because the study focused on the youth segment in Saudi Arabia, I was concerned with the age group from 15 to 24 years old, as per the country's definition of the youth age group category.

Because the lifestyle and use of technology and OSNs varies from one province to another, an online survey was distributed to capture the basics of young people's lifestyles. Since there are 13 provinces in Saudi Arabia, I aimed to obtain at least 50–100 responses from the different provinces to enable identification of cultural patterns and any similarities or differences that might appear and succeeded. Because the use of technology varies from one province to another, a more concerted effort was made to obtain responses from the five larger provinces (Northern,

Southern, Eastern, Western and Middle). This sample of participants thus allows for more cultural and structural analysis.

Far from disregarding the activities of all districts in Saudi Arabia, and in addition to convenience of access given the researcher being from Jeddah, the focus group of this study – like the interviews – focused on youth in the city of Jeddah alone. The city of Jeddah is home to most of the new physical activity initiatives taking place in the country. Jeddah also has a reputation of being more receptive to new lifestyles and for having an increased level of awareness regarding physical activity for men or women according to the official participants who were interviewed in this study and who had experience in launching physical activity events or groups in the Western region, (e.g., NSSS 2011).

- Moreover, the study also focuses on the role of structure and, hence, officials in the Ministry of Higher Education and in the GAS, which supervises 28 National Sport Federations, were chosen.

- From the Ministry of Higher Education, I interviewed one PR and three of the main decision makers on physical activity in schools who work for the National Saudi Sports School Strategy (NSSS).

- Selection of sport professionals who are active on OSNs depended on the feedback from the youth and decision makers in the GAS, on the professionals' popularity on OSNs and on the online survey. If a name was mentioned several times, then an interview with that person was sought.

The overall data collected is listed in Table 4.4 and divided into the material collected on offline and online platforms.

Table 5

Data overview for study

Type of data	Offline		Online			
Primary	Interviews with decision makers	Interviews with youth	Long & short youth online survey (110 participants)	Digital ethnography for GAS's sport federations websites (evaluation)	Digital ethnography for Twitter physical activity participation activists 2012-2015 (20 account holders, 10 of each gender)	Digital ethnography for Twitter hashtags related to physical activity participation from 2012 to 2015
Secondary	Findings from the NSSS					

4.3.2 Including youth over the age of 25 in the study

Since the data was distributed online, a few participants above the age of 25 in Saudi Arabia expressed interest in the research, and of course it was hard to ignore what they had to say. If they were included, additional insights may have closed the gap of a rather restricted sample. Many incidents arose where youth over the age of 25 were keen to share their experiences in online platforms, especially when the online survey was distributed on OSNs. Many of these individuals explained that after the age of 25, Saudi people are usually settled and ready to look after their health and able to afford to do so, as they have started working. These individuals also said that families with more than one child sometimes find it expensive to enrol their children in a fitness centre or a sport club. However, upon reaching the age of 25, it is up to the

individual to decide how to spend their money or salaries and whether or not to become a healthy role model for their family, if they have started one.

4.3.3 Excluding female scouts

In addition to the structures investigated in the study, it is important to mention that there is an additional form of physical activity participation presented through the Saudi scout team and movement for both genders. However, not enough data is available on this movement with regard to physical activity, yet it is one of the institutions that is supervised by the Ministry of Education. It is a very dynamic field and continues to develop but also keeps a low profile when it comes to female scout teams and their participation in physical activity. Most of their volunteer participation is being visible annually since 2010 during the religious pilgrimages (Hajj) where they help pilgrims, guide them, and ensure organisation and safety throughout the hajj period. Maha Fitaihi, who is in charge of the female scouts, is also a physical activity activist, who finally managed to launch the first sports day for girls in Saudi in 2017 under the patronage of the newly appointed Princess Reema, Vice President of Women's Affairs at the General Authority for Sports (GAS) and called it the 1st Women's Day.

4.4 Research methods

This section explains the methods used in this study and the study and the type of data collected to meet the objectives of the study.

4.4.1 A mixed method approach

A mixed method is a type of research in which "a researcher or a team of researchers combines elements of qualitative and quantitative research approaches (e.g., the use of qualitative and quantitative viewpoints, data collection, analysis,

inference techniques) for the broad purposes of breadth and depth of understanding and corroboration" (Johnson, Onwuegbuzie & Turner, 2007, p. 123). Similarly, Neuman (2000, p. 521) suggested that looking at something from several different perspectives provides one with a more accurate view. According to Creswell (2009), one advantage of using multiple methods is that each method assists in the development or strengthening of the other. Hence, this study employed mixed methods, starting with quantitative methods and progressing to qualitative methods, to fill the gap in each method during the data collection process.

In the process of data collection, I followed Creswell's (2012) suggestion of asking five questions when designing the study: What participants will you study? What permission will you need? What information will you collect? What instrument will you use to collect data? How will you administer the data collection? Creswell also argued that the actual process of collecting data differs depending on the data and the instruments or documents used. However, two aspects are standard across all forms of data and they deserve attention: the use of standard procedures and ethical practice. Creswell (2012) explained that standardisation refers to the performance measures, attitudinal measures and observations that rely on instruments.

4.4.2 Primary data: Designing youth and physical activity decision makers' semi-structured interviews

The agency (youth) semi-structured interviews were designed to capture the relationship and exchange of resources offline and online between youth and the decision makers from the youth point of view and based on the youths' experiences and background. This approach helped to better identify what encouraged the youth to participate in physical activity (see Appendix D for the questionnaire).

4.4.3 Primary data collection: Designing long and short online surveys

The study was interested in obtaining as much qualitative data from youth as possible, and thus first a long version of a survey was distributed via OSNs. However, the survey was not met with enthusiasm among the participants: a very limited number of youth participated, and none succeeded in completing it until the end. For this reason, another shorter version was created and distributed. The short version received greater appreciation, and a response rate of 110 participants was achieved. The initial long version included questions that addressed the social networks elements, as shown in Table 4 above (see "Designing the long survey to answer the study objectives"). The short version of the survey focused on the strength of ties between the agents and the structure and was interested in understanding which moderator has a greater influence from the point of view of the youth, as well as with regard to youth participation in physical activity (See appendix E: Short Survey).

4.4.4 Digital ethnography

Ethnography extended from the offline version to the online version in the early 2000s. This transformation was adequately described in Murthy's (2008) argument:

> As ethnography goes digital, its epistemological remit remains much the same. Ethnography is about telling social stories. When an ethnographer comes back from 'the field', they, like Walter Benjamin's (1969) 'storyteller', have 'something to tell about'. Whyte's (1993, 1943) seminal work on street corner society, among other examples, demonstrates how good ethnography effectively communicates a social story, drawing the audience into the daily lives of the respondents. With the introduction of new technologies, the stories have remained vivid, but the ways they were told changed (Murthy, 2008).

The digital ethnography design emerged from the field of anthropology, primarily from the contributions of Bronsilaw Malinowsk, Robert Park and Franz Boas (Jacob, 1987; Kirk & Miller, 1986). The intent of ethnographic research is to obtain a holistic picture of the subject of study with an emphasis on gathering the everyday experiences of individuals by observing and interviewing them and relevant others (Fraenkel & Wallen, 1990).

Digital ethnography includes making digital observations through the utilisation of the ethnographic research approach. Using this approach, I collected information with regard to multiple Saudi sports federation websites established throughout the previous years, as well as about men's and women's participation in physical activity via their OSN activities on websites such as Twitter. During the observations of OSNs and observatory visits to the country in 2013-14, I managed to join the Saudi National Olympic Committee through their participation in the London 2012 Games. I wrote down descriptions of the situation in field notes. Reading and reviewing the observational data helped me to understand the data and identify key categories, sub-categories and concepts that would help make some sense of the particular situation. During the data collection process, I regularly went through my literature review, the data collected, observational notes and transcribed interviews with sports officials and decision makers, and I identified and described patterns and themes by coding them, rearranging their categories and reviewing them.

I observed the sports online websites mostly visited by youth, including online newspapers with sports sections and sports forums, in addition to the Saudi sports federations and clubs websites. The focus was on investigating how these websites support participation in physical activity and the exchange of resources and interactivity between the organisations and the visitors.

Researching through the Internet raises many ethical concerns among researchers, with regards to anonymity and privacy (Jones, 2004). In addition it was important to understand the role of structure for the physical activity activists in OSNs, because those activists who appear influential in these networks tend to have three types of personalities/or traits as presented in their bio sections. What they write and want readers to believe is what they personally support. Their beliefs are further reflected in the topics the writers are involved in and how the writers react to topics and in what people they follow. Jones (1998) argued that online communities are closed and blocked off from the offline political landscape, so whatever is practiced online is not necessarily transferred offline. Thus, what a researcher finds in face-to-face interview is not necessarily the same as what the researcher may find upon investigating the participants' activities online. On the other hand, Herring (2001) admits the fruitfulness of researching the Internet.

Limitations of online research include that there is no way to guarantee the details related to participants when there is no physical contact between the participants and the researcher (Hewson, Yule, Laurent & Vogel, 2003, p. 52). To help minimise this limitation, I gained consent to follow some of the people who I interviewed to ensure or at least to some extent, strengthen the validity of the information gathered.

4.4.5 Primary data collection: Twitter's 100 physical activity related hashtags

This section is about understanding the exchange of resources between youth and the decision makers in the field of physical activity in Saudi Arabia and the nature of the information decision makers use to help increase participation in physical activity among youth. Saudi Arabia records the highest number of active Twitter users at 1.9 million (2015) according to the American Political Science Association 2015.

Saudi Arabia also ranks seventh globally in terms of individual accounts on social media, with seven accounts for each individual and accounts for over 40% of Twitter users in the MENA region. According to the Go-Gulf blog (2016) on Saudi Arabian statistics and trends, WhatsApp leads among the social networks with 22% of users, followed by Facebook 21%, Twitter 19%, Google+ 15%, Facebook Messenger 13%, Skype 13%, Instagram 13%, Pinterest 10%, Linked In 10% and Badoo 8%.

Although Twitter was ranked in third place, it was considered the most important framework for the purposes of the study reported here. Selecting tweets to analyse followed a specific set of criteria: First, the tweets had to be recommended by the participants of this research. Second, the tweets had to have been created by one of the participants in this research. Third, the tweets had to reflect the role of an influential decision maker (e.g., the GAS, the Ministry of Health, schools) in promoting physical activity in Saudi. Fourth, the tweets had to be trending in the timeline in Saudi Arabia based on Twitter suggestion to my personal account during the period studied.

The 100 hashtags data collection delivered interesting results:

Arabic-language specific considerations:

- It would have been cost-effective to find a software that would analyse the Arabic tweets in each of the previous hashtags to deliver an enhanced analysis of the nature of communication. The tools available at the time of the study were limited to performing the analysis either for the whole past month to year, and to the English language. The lack of such a tool was a difficult barrier in this research and for other researches in the field of social networks that use Arabic as the mainstream language. Though there are many easy-to-use and free tools for English tweets, the only way to transfer the Arabic tweets for four years was to

save them in a PDF format, and this sometimes would reach 500 MB for one hashtag (a challenge given my limited laptop/desktop space). When uploaded to software such as NVivo, the Arabic words were divided into meaningless words and letters or shifted to progress in the opposite direction (Arabic is written from right to left, unlike English). These technology challenges made it difficult to analyse and to maintain consistency in the analysis for all 100 hashtags.

- In addition, I needed to identify the number of tweets for each hashtag. A website named Topsy does that, but two years ago in 2014 Google bought it and shut it down. Now the alternative is mainly costly business-based options.

- Finally, when searching for the first tweets for a hashtag, there was a possibility that the same topic had been discussed previously but without hashtags. The interest in hash-tagging boomed in 2012. And though some of the hashtags were launched outside Saudi Arabia, such as RZH and Mizan (scale), physical activity online activists use these hashtags heavily.

Yet to overcome this obstacle, and despite the Arabic language barrier with the social network analysis softwares, and to solve the problem, the researcher uploaded the twitter accounts for the activists, and the highly PA related hashtags through Windows version of NVivo, and with the help of the tool NCapture, which exports all the tweets and hashtags. After that I went through them manually from the period of 01-01-2012 to 31-12-2015 and divided the interactions based on three characteristics; the most discussed topics, the type of exchange of resources e.g., emotional support, financial, information, facilities and services) (Giddens 1979, 1984), and finally the positive vs. negative hashtags. (See Appendix L for the list of the 100 Twitter's hashtags).

4.5 Data analysis

This section discusses the data analysis strategy in this research.

4.5.1 Data analysis strategy

Data analysis is an integral part of the research cycle; it should not be considered as a discrete phase near the end of a research plan (Corbin & Strauss, 2008; Dowling & Brown, 2010). It has to begin early in the research to influence emerging issues or even aspects of the design. It is, therefore, a formative, rather than merely a summative, process. A mixed method often produces a large amount of data, as it combines both quantitative and qualitative design methods. Therefore, the analysis of the data can be a lengthy process. As Creswell (2009) has suggested, the analysis of the data in qualitative research is an on-going process involving continual reflection about the data, asking analytic questions, and writing memos throughout the study. The researcher collected qualitative data, analysed it for themes or perspectives, and reported four to five themes.

According to Stokowski, (1994), the institutionalisation of leisure occurs on three levels: the individual level, where leisure is experienced; the community level, where individuals stand in relation to diverse sets of others; and the society level, where the services are provided. To answer my research question, which revolves around the relationship between the individual and their structure, I followed Stokowski's (1994) recommendation and hence divided analysis into three levels. Starting with the individual, I analysed the individuals through survey, aggregation and quantitative analysis, then via qualitative analysis and ethnography at the community level, and, finally, through a combination of both quantitative and qualitative data analysis across all levels to identify the patterns in the networks connecting both the individual and his/her structure. Hence, I started by analysing the

quantitative data that was obtained through both the long version of the online survey targeting youth aged 15–24 through OSNs, and the shorter version of the survey. Secondly, I analysed the qualitative data obtained through the semi-structured interviews with official and decision-making personnel in the structure surrounding youth. Finally, I interpreted both datasets to understand the macro version of the network across the society level through the use of NVivo, which helped in revealing the themes and highlighted the areas where structures shared similar/different points of views.

In addition, because the data collected consisted of both primary and secondary data, the analysis followed, as suggested by Creswell, (2012), in six stages: Step one included preparing and organising the data. This also included transcribing the data, translating it and adding the final analysis by hand or computer. Step two explored the data and coded it either by themes or descriptions from minor (sub-themes) to major themes and then layered it and interrelated the themes. An example of this layering was coding the themes based on the categories investigated in the structure of youth (e.g., family, school, friends), and based on the highlights of these previous categories (e.g., lack of support for women). Step three used the codes to build descriptions and themes. Step four organised the findings that are elaborated in the following chapter (Results & Findings). The primary form for representing and reporting findings in qualitative research is a narrative discussion. A narrative discussion is a written passage in a qualitative study in which the author summarises, in detail, the findings from the data analysis. In step five, I interpreted the findings. Step six consisted of validating the data with regard to the accuracy of the findings through triangulation, member check and external audit as suggested by Creswell (2012) and through the use of NVivo. Additional validity procedures included making

sure I interviewed officials whose name and identity were known by the public. Although the online platform includes anonymous identities, the researcher conducted the digital ethnography and interviewed only the physical activity activists whose real identity was known to the public.

Braun and Clarke (2006) proposed a six-phase analysis process: Familiarisation with the data, generation of initial codes, search for themes, review of themes, definition and nomenclature of themes and report production. Aronson (1994), in addition, suggested thematic analysis should include the following stages: data collection, identifying all data that relate to the already classified patterns, combining and cataloguing related patterns into sub-themes by pointing out an emerging pattern and, finally, building a valid argument for choosing the themes and these were used to learn about the digital context.

4.5.2. Analysing additional primary data

Analysis of additional primary data in this study included four parts: a youth online survey, the NSSS survey (2011), the data for people who were active in social networks and who promoted physical activity participation and the data on physical activity institutions' websites. For example, information was collected from the Internet on the participants in this study through observation and digital ethnography of their OSN accounts and their interactivity, involvement and engagement with their followers online. This section outlines the four parts of the primary data: First, youth online survey: The long version and the short version. While the long version included 58 incomplete responses, the short version included 110 complete responses. Second, NSSS findings from the interviews conducted with parents, principals, PE teachers, PE supervisors, and students from Jeddah, Riyadh, and Dammam. (See appendices H, J, and N for examples from the NSSS findings). Third, data collected

from the digital ethnography of physical activity activist in OSNs and in specific (Twitter). This was divided into two parts: male physical activity activists and female physical activity activists. Fourth, interviews conducted with decision makers in the Institutions responsible for facilitating physical activities among youth. This also includes the GAS's sports federations' websites. There was an evaluation for the period of 2010, 2012 (the Olympics) and 2014 (after the new sports federations elections and appointment of the new Secretary General).

In addition, the individual level (Ego Network) investigated youth, while the community level (Dyad and Triad Network) examined the physical activity decision makers/facilitators, and the society level (Subgroup Level and Whole Network) observed the whole network where all structures take roles.

Based on the MOE statistics in 2012/2013 and based on the fact that only private schools and universities provide physical activity for women in Saudi Arabia, the level of physical activity among women is very low; only approximately eight per cent of the population of women aged 15-24 in Saudi Arabia report exercising regularly. Attending a private school or university does not mean that women participate in physical activity consistently or that the school itself offers such facilities. It is only an indication that the school supports physical activities in general. In contrast, male students always have the opportunity to participate in physical activity at their schools. The MOE's support of physical activity among women was limited to some extent due to the country's rules and regulations. Limited access for parents, friends, OSNs and fitness clubs also affected women's participation. Additionally, the new sidewalks in the Western, Eastern and Middle provinces provided a good opportunity for individuals to participate in physical activity. It is

also important to point out that the majority of private schools and universities are located in the Western, Eastern and Middle provinces.

4.5.3 Data analysis tool and justification of choice

The role of software in assisting researchers to analyse data is becoming increasingly important. In terms of qualitative management and business studies, NVivo has been the most-used software package (Jones & Diment, 2010) to aid the analysis of data. Hence NVivo was deemed significant in managing the amount of data gathered for this study. See Appendix (F) Table showing the thematic analysis of the data based on the role of the structures and what they provide.

4.6 Validity and reliability in mixed methods

Validity and reliability in a qualitative study tend to be difficult to establish and, hence, there is a need to find a supporting design to fill the gaps; thus, the mixed methods approach was suggested for this study. However, ethical issues are becoming part of the conversation for mixed methods research, with most scholars focused on ethical issues using a transformative design, and with these issues concerning in particular respecting individuals and underrepresented groups. Ethics in the mixed methods approach needs to relate to important issues arising in both quantitative and qualitative research. Moreover, ethics can relate to mixed methods designs because different types of design raise specific ethical issues that need to be anticipated by the researcher (Creswell, 2012). In addition, the mere absence of reliability in qualitative research could be problematic, as human behaviour is rarely ever the same for different individuals; the experiences of one person rarely match those of another, and this can be overcome via the use of mixed methods. Gratton and Jones (2010) argued that reliability and validity are often used to assess how ‘truthful’ a piece of research is, and they suggested that researchers employ methods

that have been found to be both reliable and valid by other researchers (p. 95). An example is the use of the sports spectator identification scale, a scale that has been found to be both reliable and valid (Wann & Branscombe, 1993).

Gratton and Jones (2010) suggested that the key is to ensure that sufficient detail is provided so that others can repeat the study, even if the findings would not be exactly replicated. Other authors (e.g., Lincoln & Guba, 1985) refer to this as dependability. Therefore, following the advice of Creswell (2012), mixed methods researchers tend to advance the sequence of data collection to begin with, using concurrent or sequential approaches or some combination thereof. Several options exist for the sequencing of data collection: one can collect quantitative data first, followed by qualitative data; one can collect qualitative data first, followed by quantitative; or one can collect both quantitative and qualitative at the same time, as well as in sequence (Creswell, 2012, p. 549). I chose to follow an explanatory design that started with quantitative data collection and then progressed to qualitative data collection. In addition, as in my study I was the primary instrument of the data collection and analysis, I further improved my reliability through training and practice. The same questions were used in both the online survey and focus groups in the same sequence and, thus, the data were obtained in the same manner, thereby ensuring a high level of consistency throughout the research.

A number of techniques were available to prevent biases and errors and to ensure validity and reliability. Two were chosen and applied throughout the study: triangulation and a member check. The following sections define and discuss these three techniques.

4.6.1 Triangulation

Triangulation often refers to the combination of multiple qualitative methods

(e.g., Flick, 2010); however, the combination of qualitative and quantitative methods has been labelled as triangulation as well (e.g., Kelle & Erzberger, 2004). Hence, triangulation encompasses researchers taking different perspectives on an issue under study or, more generally, in answering a research question. These perspectives can be substantiated using several methods and/or several theoretical approaches. Both are, or should be, linked. Furthermore, triangulation refers to combining different sorts of data on the background of the theoretical perspectives, which are applied to the data. As far as possible, these perspectives should be treated and applied on an equal footing and in an equally consequent way. At the same time, triangulation (of different methods or data sets) should allow a principal surplus of knowledge. For example, triangulation should produce knowledge on different levels, which means that it should go beyond the knowledge made possible by one approach and thereby contribute to promoting quality in research (Flick, 2008, p. 41).

4.6.2 Member check

Member checking is "the most crucial technique for establishing credibility" (Lincoln & Guba, 1985, p. 314; see also Hammersley & Atkinson, 1995, pp. 227–30). Member checking occurs throughout the inquiry, and it is a process in which collected data is 'played back' to the informant to check for perceived accuracy and reactions. During the data collection, I double-checked the data from the official sources and institutions included in the investigation, and I looked online for further news on the information provided.

4.6.3 Trustworthiness

According to Bailey (2007), "trustworthiness does not mean that the reader necessarily has to agree with the researcher; rather it requires the reader to see how the researcher arrived at the conclusion he or she made" (p. 181). Thus, Bailey

(2007) further emphasized that the researcher interested in establishing trustworthiness should take care to provide a detailed methods section in their research write -ups. Various terminologies were being coined and many different approaches were being discussed as alternatives to evaluating qualitative researches in the literature (Creswell & Miller, 2000; Denzin & Lincoln, 1998; Lewis, 2009; Lincoln & Guba, 1985; Merriam, 1998).

In addition, a highly influential and popular point of view was by Lincoln and Guba (1985) who redefined reliability and validity as parallel concepts consisting of four criteria of credibility, transferability, dependability and confirmability and later Guba and Lincoln (1994) expanded it into an embedded set of five criteria: credibility, transferability, dependability, confirmability and authenticity.

Lincoln and Guba (1985) argue that ensuring credibility is one of the most important factors in establishing trustworthiness. Specifically Yin (1994, p.34) asserts that in case study research, "multiple sources of evidences" are used as a tactic to triangulate data to address concerns with construct validity because the multiple sources of evidence essentially provide multiple measures of the same phenomenon. Creswell and Miller (2000) advise that in establishing trustworthiness, the researcher needs to employ a systematic process of sorting through the data to find common themes or categories by eliminating overlapping areas.

Accordingly, to ensure content validity, reliability, and trustworthiness the data collected from each structure was discussed with the other structures and especially with the OSNs PA activists, as they are the most structures involved and aware of the present situation and what is offered to youth because they also bridge the link between youth and their structures in the online social networks. Though the data is valid, reliable and trustworthy, the case with OSNs rapid changes makes it hard to

predict that the same data could be generated again over a period of time especially if the platform of investigation was new and different. Also, considering Saudi Arabia is moving in the wheel of development may mean that the situation and the door of expressing oneself and exchanging information may change too; therefore the results may change too.

Finally, and to sum it up and as the investigations continues, researchers seems to continue to put their input into this field of qualitative data quality and tend to suggest more additional ways to ensure better outcomes such as a recent researcher who confirms the importance of following the previous studies of ensuring high quality in qualitative data, and introduces a model of eight elements to help her students cover all the areas. Tracy (2010) suggested eight characteristics to consider in order to ensure high quality of the qualitative data which are; (a) worthy topic, (b) rich rigor, (c) sincerity, (d) credibility (triangulation or crystallisation), (e) resonance, (f) significant contribution, (g) ethics, and (h) meaningful coherence. Qualitative credibility is to be achieved through practices including thick description, triangulation or crystallization, and multivocality and partiality (Tracy, 2010). The authors explains thick description is one of the most important means for achieving credibility in qualitative research. By this, I mean in-depth illustration that explicates culturally situated meanings (Geertz, 1973) and abundant concrete detail (Bochner, 2000) and this was done throughout. Triangulation and crystallization are two practices that align in craft but differ in paradigmatic motivation. Similar to how multiple pieces of data ease geographical navigation, triangulation in qualitative research assumes that if two or more sources of data, theoretical frameworks, types of

data collected, or researchers converge on the same conclusion, then the conclusion is more credible (Denzin, 1978).

Crystallization is a term that relates to the practice of using multiple data sources, researchers, and lenses—but is motivated by post- structural and performative assumptions (Ellingson, 2008). Richardson (2000b) proposed the crystal as a "central imaginary" that transcended the "rigid, fixed, two-dimensional" triangle (p. 934). "This conceptualization is designed to provide a parsimonious pedagogical tool, promote respect from power keepers who often misunderstand and misevaluate qualitative work, develop a platform from which qualitative scholars can join together in unified voice when desired, and encourage dialogue and learning amongst qualitative methodologists from various paradigms (Tracy, 2010, p.839).

4.7 Ethical considerations and access

Addressing the main ethical considerations in this research study involved a number of stages. Firstly, the study gained ethical approval from the Brunel University Ethics Committee. Secondly, an appropriate online version for the participants' consent was created for the online survey, and then a secondary hard copy for the interviews and focus groups was created as well. An additional parental consent form for the participation of youth under the age of 18 in the focus groups was prepared. Participants were promised confidentiality, and they were informed that they could withdraw from the study at any time. The purpose of the study was described in detail on the consent form and then carefully reviewed with each participant before conducting the interviews and focus groups.

In the online survey, no names were used; the study asked only for the sex, age, city, type of school and sport played. Furthermore, the survey explained not only

in the consent form but also in the discussion that the researcher would be readily available to discuss any concerns and questions that the participants may have.

To access secondary/primary data, I obtained permission to collect data from the Union of Arab National Olympic Committee, which includes the Saudi GAS and the Saudi National Olympic Committee. In addition, as a researcher with significant freelance journalist experience, I managed to obtain verbal permission to collect data from Prince Faisal Bin Abdullah, the Minister of Education and chairman of the Saudi Equestrian Fund, who supervises the new strategic development of school sports. His office functions under the umbrella of the Saudi Ministry of Education and the Tatweer Public Education project belonging to the Custodian of the Two Holy Mosques King Abdullah.

The possibility of effective deanonymisation of large data sets (Narayanan & Shmatikov, 2008) has made it difficult for researchers to obtain and subsequently publish data from social networks such as YouTube, Facebook and Twitter. The field of computer science, for example, uses the term Big Data to refer to data sets that are too big to be handled by regular storage and processing infrastructures. It is evident that large data sets have to be handled differently than small ones; they require different means of discovering patterns and sometimes allow analyses that would be impossible on a small scale (Bollier, 2010; Manovich, 2012; Russom, 2011; Savage & Burrows, 2007).

Mahrt and Scharkow's (2013) research is based on the assumption that users implicitly consent to the collection and analysis of their data when users post the data online. In light of current research on privacy in online communication, it is questionable whether users can effectively distinguish private from public messages and behaviour (Barnes, 2006). But even if they can, since it is technically possible to

recover private information even from limited public profiles (Zheleva & Getoor, 2009), Big Data research has to solve the problem of guaranteeing privacy and ethical standards while also being replicable and open to scholarly debate (see also Markham & Buchanan, 2012).

According to Mahrt and Scharkow (2013), concerns about the reliability and validity of measurement have been raised in various critical papers on Big Data research, most recently by Boyd and Crawford (2012). Among the most frequently discussed issues are (1) comparatively shallow measures, (2) lack of context awareness and (3) a dominance of automated methods of analysis. Clearly, these concerns and their causes are related to an implicit or explicit tendency toward data-driven rather than theory-driven operationalisation strategies. In addition to the possible availability bias mentioned above, many prominent Big Data studies seem to either accept the information accessible via digital media as face-valid, e.g., by treating Facebook friendship relations as similar to actual friendships, or to reduce established concepts in communication such as topic or discourse to simple counts of hashtags or retweets (Romero, Meeder & Kleinberg, 2011; Xifra & Grau, 2010). While deriving measurement concepts from data rather than theory is not necessarily problematic, researchers should be aware that the most easily available measure may not be the most valid one, and they should discuss to what degree its validity converges with that of established instruments. For example, both communication research and linguistics have a long tradition of content-analytic techniques that are, at least in principle, easily applicable to digital media content. Of course, it is not possible to manually annotate millions of comments, tweets or blog posts. However, any scholar who analyses digital media can and should provide evidence for the validity of measures used, especially if those measures rely on previously unavailable

or untested methods. Despite the vast amount of scholarship on these methods, the actual trade-off between measurement quality and sample quantity is hardly ever discussed in the literature, although it is central to the question of whether and when. For example, we accept shallow lexical measures that are easy to implement and technically reliable as substitutes for established content-analytic categories and human coding (Romero, Meeder & Kleinberg, 2011; Xifra & Grau, 2010).

According to Mahrt and Scharkow (2013), the requirement of larger or smaller data sets is also linked to the question of what inferences one hopes to draw from the analysis: Is the researcher interested in aggregate or individual effects, causal explanation or prediction? Predicting individual user behaviour, for example, on a website requires both reliable and valid measurement of past behaviour as well as many observations. Longitudinal analyses of aggregate data, e.g., using search queries (Scharkow & Vogelgesang, 2011) or large collections of tweets (Chew & Eysenbach, 2010), do not necessarily require perfectly reliable coding or large sample sizes: If a blunt coding scheme based on a simple word list has only 50 per cent accuracy, it is still possible to analyse correlations between time series of media content and user behaviour as long as the amount of measurement error is the same over time (see Granger, 1986).

In addition, a platform's interfaces (or ethical constraints) may prevent researchers from accessing the information that would be most interesting to them, confining them to descriptive exploration of artificial categories (Mahrt & Scharkow, 2013). Visualisations based on such categories, for example, connections between social media users, may allow the discovery of patterns (Dodge, 2005), but without cases to compare them to, these patterns may not lead to insight.

4.8 Data collection and analysis challenges, strengths and weaknesses

This section addresses the strengths and weaknesses of the previously explained research with relation to the physical activity participation among youth in Saudi Arabia. As noted previously, data access and social networks lack support on Mac computers, and the Arabic language is unsupported in the available online social network analysis softwares.

1. The first key challenges for this approach was gaining access to the data. Gaining access took a lot of time due to the protocols in Saudi Arabia, where I had to gain approval as a female researcher and where my novel area of interest is unique even between international researchers. Laranjo et al., (2015) investigated online interventions. The researchers found only seven Facebook interventions (i.e., Bull et al., 2012; Mayer et al., 2012; Cavallo et al., 2012; Napolitano et al., 2012; Valle et al., 2012; Young et al., 2013; and Foster et al., 2010) and one using Twitter (Turner-McGrievy & Tate, 2011). Hence it was difficult to design a useful approach to gather the required information and meet the objectives. It was thus challenging not only to gather the information but also to find a way to gather it. My aim was to identify the role of the OSN under investigation (i.e., Twitter) and the role of the Saudi Arabian youths' social structure in creating social change and promoting physical activity participation among youth, specifically youth in Arabic countries such as Saudi Arabia. To achieve that aim, I adopted mixed methods to ensure the richness of the delivered material with respect to the various geographical aspects of the country and its land and what it offers from different social tradition, cultures and mentalities, some of which accept the participation of youth, and some of which forbid it for their daughters. I also investigated the structure in both online and offline platforms to allow room for in-depth investigation of any differences between what the

participants had to say offline and what they really do online with friends, friends of friends, and physical activity participation decision makers who are active in the online platform. In addition, since most of the previous study concerning physical activity participation focused on the role of personal motivation, and there was no existing research on the role of structure in youth physical activity participation in Saudi Arabia, it was interesting to investigate the topic through this approach and see if key moderators that exist in different cultures exist in this type of family-oriented culture, where religion is a powerful influence.

2. Social networks analysis softwares continue to be developed and updated for Windows. As I owned only a Mac and was not conducting my research through a business company, I had to make the best use possible of the limited tools available. I chose to use the latest version of NVivo 10. I installed an operating system called Parallel into my MacBook and then Windows 10 to allow the use of NVivo 10. After that, the data required was obtained through a tool called NCapture, which is a plug in for Google Chrome (web surfer) that works for Twitter data only. This tool generates the data in NVivo 10, the latest version for students.

To upload the Twitter accounts of the physical activity activists in OSNs, including their followers and people they follow, I went to their page and clicked on the NCapture button which appeared next to the website link in the web surfer and then saved it to my data set. To upload the participants' tweets, I used the formula suggested in the Twitter Search API help website (e.g., @sheneamer since: 2012-01-01 until: 2015-12-31) to mark the study period of interest. I saved these to my data set as well. Afterwards in NVIVO 10, I opened the files from the top bar options External Data, and then chose Data from other sources (From NCapture).

NVivo 10 was used not only because it uploads data from Twitter but also for three other reasons. First, it allows generation of a word cloud for the most frequently used or mentioned word by each participant. It also allowed me to remove words such as website links such as http:// and letters to include the 100 most frequent words. And since the data was delivered in both Arabic and English, the word cloud included both languages, and was afterwards translated. Word clouds were created through the words frequency feature. After removing words such as *in, on* and *at* and the links https and http, I limited the list to 100 words. Since most of the participants are bilingual in both Arabic and English, the word cloud showed usage for both languages, but Arabic dominated the clouds. The word cloud was beneficial because it showed how many times the participants referenced other physical activity activists in the OSN. These numbers indicated the complexity of the exchange of resources as users referenced and mentioned each other. The findings also indicated the strength of ties between the participants in the field.

Second, since the exchange of resources is one of the most important characteristics for any social network, four child nodes (information, emotional support, financial support, facilities and services) were created under the father node (exchange of resources) accordingly to understand the links between these participants and youth. Another father node was created for the ‘strength of ties’ characteristic and included two child nodes (weak tie, strong tie). To understand the links between the participants and their followers, NVivo 10 helped in showing me if the participants were connected to each other to support the same goal and to the other decision makers in the physical activity field in Saudi Arabia, as it provides the location of the followers too. NVivo also allowed room to investigate the relationship features such as Associative (Anna 'knows' Ken), One way (Anna 'employs' Ken) or

Symmetrical (Anna 'works with' Ken). Third, NVivo 10 allowed me to see what topics in which periods attracted the highest activity between the participants and their followers and to relate the topics present in the data to the topics under discussion in the study.

3. Al-Ghatham (2015) used the phrase “the silent followers” to refer to the inactive silent followers of an account. The issue that arises when taking the number of followers as a parameter to measure influence, is the number of silent followers is uncertain. The issue was overcome in my study by following the social influence network theory, which also states that those users who belong to the same networks influence other users. Users’ behaviours play a role in altering those of others within the same network (Friedkin & Johnsen, 2014), which means that at the end, the influence exists by following these influential activists.

4. When Seippel and Lusher (2008) used UCINET, social network analysis software, to investigate social networks characteristics in the field of sports, they identified two crucial points. First, sport is a large organisation. Second, there seems to have been a decrease in affiliation to sports in the adult population. Even though the numbers are among the highest in the field, sports (for adults) seem to be somewhat on the wane, and thereby less influential. The researchers also added that traditionally, the links between sports and religious organisations have been weak, but the 20 years covered by their data showed a very clear improvement of these relations, and sports and religion are now closer than previously. Second, weakest link—and below average in the population in 1982—have been to charity (humanitarian): these links have also strengthened considerably. Culture and environment were both expected to be rather weakly linked to sports at the starting point in 1982, but these links were then hypothesised to grow stronger over time.

These expectations were confirmed: The links to culture and environment were among the strongest at the end of the period. Relative to size, sport seems less embedded in civil society than most other organisations and thus also weak in bridging social capital. Sport consequently does not provide a strong opportunity structure for communication and persuasion, and therefore lacks a key precondition to qualify as an influential factor in civil society. The analyses presented in Seippel and Lusher's article also indicated that as a type of organisation, sport has increased its centrality in the field of organisations more than most other types of organisations in the period 1982–2003, and sports appear as less 'sectarian' than in 1982. The two exceptions are trade unions and culture organisations, both of which have become more central. Seippel and Lusher's findings made it a challenge to investigate even further the role of religion specifically, so in this research it was hard to ensure whatever the researchers had said with regard to physical activity and sports was accurate and valid, or even implemented by them. To overcome this, I depended on the word of mouth from my participants through the face-to-face interviews, and then on the data collected from the online platform on the hashtags related to physical activity and religion. The hashtags delivered more honest and vocal opinions, especially as many users were anonymous on Twitter and did not fear their true opinion being exposed to the public in such hashtags.

5. Again, with regards to the OSN analysis softwares limitations, it was difficult to find an accessible software or tool capable of tracing tweets to their first launch. The Topsy website, which used to offer a real-time search engine covering the full archive of Twitter back to 2006, had the fastest and most complete coverage of the data on that social network. But Google.com bought Topsy in 2013 according to the Dec. 24, 2015 article published in the Business Insider UK online magazine, and

then Google.com shut it down. The alternative choices were to find a business company willing to do the search for me, or to select only a few features for the search (e.g., the person who first wrote about a topic, when, and their location) and then to use a website called "Who said it first on Twitter?" at http://ctrlq.org/first/. I chose the latter option, and used the website to enhance my table (see Appendix L).

6. The Arabic language proved a barrier in terms of translations and English supporting softwares. In Saudi Arabia, Arabic is the first language, and English is second. To ensure that meaningful phrases of the same quality and consistency were gathered, the mother tongue of the participants was used in the interviews. After that, the data were sent for translation by experts who speak Arabic, and then additional bilinguals in both Arabic and English read the data for the third time to double check for any mistakes lost in translations. The case was different with the data collected from the Internet. Although NVivo was the best choice to import data in Arabic, the data was imported in PDF format (meaning it came out as photos). This format made it difficult to transfer and translate the data. I overcame the format issue by going through the PDFs manually to investigate the nature of the exchange of resources in each of the 100 chosen hashtags based on the elements in the table (see Appendix L for the list of the 100 Twitter's hashtags).

4.9 Conclusion

This chapter justified and explained the use of social network structural theory (Degenne & Forsé, 1999; Stokowski, 1994) to deliver the data required for this research and its research objectives. A justification for the sampling and the limitation was given in addition to a statement regarding the ethical considerations and access. The results are displayed in the following chapter.

Chapter Five: Findings

5.1 Introduction

The objective of this study is to investigate the role of different structures in both offline and online platforms surrounding youth and to look at how decision makers in the field of physical activity exchange resources with youth to encourage them to participate in physical activity. Several themes and patterns were developed through the investigation of both types of platforms as is discussed below. This chapter highlights the findings through the lens of the different kinds of moderators and supported by the data collected from both platforms. Due to ethical considerations, names are not mentioned in the quotes, and participants are referred to by role only (senior officials, officials, youth, and digital activity activists).

Previous studies on youth participation in physical activity highlight the role of self-efficacy in either encouraging or discouraging youth from participating in such activities. However, the role of different societal structures was also noted, and further research was recommended to justify their major effect empirically. Accordingly, this study focuses on the significant role these structures may hold in motivating participation among youth aged 15 to 24 years in Saudi Arabia. The focus was on tracing the exchange of resources and the increase of awareness through offline and OSN platforms.

My data suggest families have the strongest effect on the participation of youth, and fathers in particular are the models behind female participation. Friends come next, as youth spend time together at school and interact with friends on OSNs, introducing each other to new physical activities and pushing fellow friends to excel in them. Governmental institutions such as the GAS, the MOH and sports media also influence youth participation, as these institutions provide information, facilities, and

services. Their influence nevertheless has only been realised in the past two or three years since the institutions updated the use of OSNs to exchange information. Private institutions created by the public for the public have a greater influence as they promote participation in both platforms and attract a larger number of youth, both men and women. Religion showed a positive and negative influence on the physical activity participation of youth. Finally, OSNs influenced participation and communication, increasing participation in physical activity for both genders. OSNs broke barriers present in offline networks, especially for women, who finally managed to find a platform to communicate, share their experiences in the field and support each other.

5.2 The role of family and parents

Families play the most pivotal role in facilitating and providing youth with opportunities to engage in physical activity in its various forms in Saudi society. According to this study, yet, participation depends on many factors. In 2006 Kay investigated the role of the influence of Muslim families over their young women's participation in a specially designed sports programme, and revealed parents have an extensive influence on the young women's (13-18 years old) involvement in the sport programme and over their lives as a whole, and the significance of Islam within this. In Kay (2006, p.3) she also explained how family plays a role and are strict about enforcing and keeping certain religious and traditional lifestyles; "Gender segregation was central to the success of the project, not only important to the young women themselves, but also of critical significance to their families. The young women's families needed to be assured that appropriate provision was being made and that their daughters' participation did not transgress religious or cultural requirements."

Therefore, Kay (2006) claimed ‘Family’ appear to be an effective, legitimate and productive focus for sports researchers.

Meanwhile, Wing, Bélanger and Brunet (2016) also acknowledged that parents in general do influence their children's behaviour and participation in physical activity both in and out of school, directly and indirectly, by emphasising self-efficacy and enjoyment of physical activity. Though the previous theory suggested parents’ influence on their child is considered to produce self-efficacy, according to the social networks structural theory, parents’ influence is a structural influence instead since parents are part of the structure. These factors include socioeconomic status, geographical location, parents’ level of education and level of participation in physical activity, and finally the level of participation in physical activity in the extended family.

5.2.1 Socioeconomic factors

Social economic factors are also related to the level of faith among men and women based on Schnabel’s 2016 study and this may suggest an interesting fact which supports the findings of this study that women and men of low income (and usually lower level of awareness of PA and its benefits for both sexes) who have strong faith may tend to promote PA participation among males and not females. This is because the more religious the person is, the more he will be strict towards having his/her daughter in a male dominated field such as sports and this may be a sign of the recent situation in the country where PA activity is practiced the most among males.

Additionally, youth participants on several occasions referred to socioeconomic factors indirectly when they spoke about the obstacles hindering their participation in physical activity. For example, one participant mentioned that fitness centres are becoming very expensive and unaffordable, especially if the family has

more than one child interested in joining a health and fitness club. The older youth participants also said that since they are not yet employed and are still students at universities, they cannot afford to join centres unless their parents are willing to pay for it.

5.2.2 Geographical factors

As mentioned in the methodology chapter, Saudi Arabia is a large country, which occupies 80 percent of the Arabian Peninsula's estimated 2,149,690 km^2, and it is the world's 13th largest country (CIA World Factbook). Saudi Arabia is divided into 13 provinces and sub-cultures, and traditions vary from one to another; consequently, the level of awareness with regards to physical activity participation varies as well. The results show that parents in the Western, Eastern and Middle Provinces have better knowledge with regard to participating in physical activity compared to other provinces. Moreover, officials who were interviewed stated that in order to introduce a new physical activity in the country, for women in particular, the Western region would be targeted first because of its history and because its population is more likely to welcome the initiative.

5.2.3 Parents' level of education and participation in physical activity

Because parents tend to influence their children's behaviour, the level of influence varies. This variance was visible in the data collected. Parents who already participated in physical activities had a stronger influence on their children's decisions to participate. This influence began at an early age due to the parents' awareness of the importance of physical activity and, of course, to their participation in it themselves. Youth in physically active families were not only introduced to physical activity early in life, but were also introduced to more than one physical activity. Accordingly, how parents viewed the benefits and importance of physical

activity was reflected in how seriously they encouraged their children to participate. The data claims that the amount of free time tended to prevent youth from participating in physical activity. In Western culture, youth over 18 years old tend to control their free time as soon as they move out of their parents' homes; however, in the Middle East and GGC countries like Saudi Arabia, youth still adhere to their parents' and societies' traditions and culture, and their free time is taken up by family functions. Youth tend to obey their parents and many cancel outings with friends to attend to family obligations. This is more common in rural areas and provinces, where it is considered important for men to find a job and for women to learn housewife skills; both are expected to marry. The average age for marriage for men was previously 20; however, now as women's wages are increasing, men have delayed marriage, preferring to pursue higher degrees or save more money, remaining single until the age of 38 on average. In addition, women (especially those who manage to work and are independent) have started to gain confidence and to become more particular about their future spouses. This also contributes to the delay in marriage. According to the Ministry of Planning Statistics, more than one million Saudi women reached 28 and a half without getting married (Rashad, Osman and Roudi-Fahimi, 2005). Most of these women were in the Western, Middle, and Eastern provinces, and the smallest percentage was in the Northern province. The marriage age in Saudi has been increasing as Rashad, Osman and Roudi-Fahimi's study (2005) claimed.

Generally, parents tend to have control over their children's decisions and how to spend their free time until the age of 30, yet depending on the background of the parents and their knowledge and understanding of how their children spend their time in physical activities, this may vary. One female participant commented on her father's role in encouraging her to participate. She said, "I'm involved in tennis. My

father trained me in tennis. I loved it because of him. He's not a professional but he plays it in his free time. He trained me when I was 16."

In addition, and due to the effect of culture, some parents – especially mothers – believed, like their ancestors, that women might lose their virginities while practicing physical activities, thus losing her integrity in society because of lack of sex education and fear of hymen tear during physical activity. This could potentially bring shame to herself and her family, and no one would marry her. These ancient beliefs and superstitions lead mothers to forbid their daughters from participating in physical activities. However, one of the youth participants said that since early childhood, she had seen her mother participating in physical activity and she followed in her mother's footsteps. She would always seek her mother's help to learn or increase her knowledge about physical activity. Another youth female explained that her dad always supported her even though her mom feared for her health and did not want her to train in the hot sun. Still, her dad would encourage her and play with her. Families were more likely to use the weather as an excuse to prevent their children from playing outside if the child was female. For example, this participant's brother would go out and play but no one would try to stop him because he is a boy and that is what boys do.

According to a female official who had experience running a fitness centre for women,

> Mothers should be targeted because, as you know, mothers are the ones who drive their girls to work out. Mothers don't have full comprehensive understanding of the importance of exercise for them and their girls. Exercises will make them more energetic, active and productive so that they can

> contribute to society. We want mothers to have a more open-minded view of exercises for girls. Their current view is narrow-minded.

The same female official continued, saying that the reason behind the mothers' motivation was not for the general wellbeing of their daughters:

> When we started our gyms, most mothers who brought their girls asked us to help them girls shed a few kilograms here and there so that their girls looked thinner and their chances of finding a good husband would increase. This way of thinking is wrong. The focus should be on health. But you know our society.

Though the increase of awareness among mothers was suggested, so was it for fathers. As one of the participants explained, fathers are the decision makers and the primary guardians of their children, especially their daughters. When daughters are married, their husband then becomes their guardian. Fathers can take their daughter out of school, prevent them from working and ban them from traveling if they want. In the case of physical activity, this unfortunately happened in the Eastern Province in 2015 when a governmental school for women wanted to introduce basketball. The female students went back home excited about it, but strict, extremely religious fathers went to the school and threatened to pull their daughters out if the basketball equipment was not removed from the facility immediately. The incident was reported in the Saudi media such as the Alyoum newspaper as well as social network sites like Twitter. Despite these barriers, some parents still try to maintain healthy lifestyles to be good examples for their children. However, according to one male youth participant, such support is not enough; he believes that if he decided to leave school and play pro football, his family would disapprove. He said,

> I like to read about football online and learn about the techniques and try them myself. But my parents want me to be a businessman. If I got an offer from a football team, I'd go. I have a friend who got an offer from the Celtics in Scotland. If I got the same offer, my parents wouldn't let me go.

Three youth female and two youth male participants pointed out that their parents who participate in physical activities are their role models, but when asked if there are others outside of their family members, the women said they could not think of even one because female athletes are not well known in the country. “It would be nice to see and follow a female athlete of our generation because then she will know what obstacles we face and we would benefit from her experience,” said one of the female youth.

Siblings also have an influential role in the promotion of physical activity. When asked if he influenced his brother, one the male youth said, “Yes. He copies me. He's crazy about football and we play together.”

5.2.4 The role of extended families in Saudi society

As mentioned previously, Saudi Arabian culture is family-oriented and it is important to respect family members and adhere to the familial obligations that come with it. Some families worry about their daughters’ exposure to different friends and prefer to have their daughters mingle and mix only with their siblings or cousins. This creates a strong tie between cousins as they grow up together. Supporting one another is important to enjoy sustainable ties with family members. Cousins and second cousins all usually hang out together, go to school together and spend their weekends together. Consequently, their role is at least as important as the role of an individual’s siblings. According to the youth participants, sometimes they listen to their cousins

more than their siblings, taking them as their role models. In this way, sometimes cousins may be the reason behind the decision to join a fitness centre or a health club.

One of the youth women mentioned her cousins and explained how her participation in basketball encouraged her sister and cousins to join, and now they all play together in a team and support each other. “My cousins used to come and watch me and cheer for me, but now they are part of my team which makes playing even more fun,” she said. A male youth commented on how his relatives helped him find a coach:

> After losing weight, I started kickboxing. I have liked it since I was a child. And I asked my relatives about a good trainer because they go out more and know better as they are older, and they told me about an American guy I train with now.

Family support was also discussed by physical activity online social activists. One explained that during online campaigns to promote health and fitness, for example, some of the followers doubted the voting process, claiming that friends of friends tend to vote solely because of the family connection. This is part of the social networking pattern; they want to please their peers from similar cultural backgrounds because, as one of the participants said, “Family comes first.”

5.3 The role of friends

After family members, friends take second place in motivating and influencing youth participation in physical activity. This section reports the findings that suggest the important role of friends in the youth structure in Saudi Arabia. Such influence takes place in two ways: 1) They introduce each other to new physical activities, and 2) They support each other in these activities. The short survey highlighted this finding very clearly in different areas such as participating in physical activity,

participating in OSNs and making decisions about how to spend free time. Friends share almost 16 hours of the day together, half of it at school and half through OSNs, where they continue to share their views and discuss mutual interests.

The survey questions were developed to answer the research objectives and provide empirical data to help understand the relationship between youth and the different social structures around them. The first survey showed that cousins came in first place followed by friends and then PE teachers. However, the short survey showed that 54 out of 110 youth believed the order of influence was first themselves, then friends and fathers, and then mothers. This suggests that the structures or moderators closest to this group are the most influential – family members and cousins, or friends. However, almost half of the participants in the short survey believed that is because of their inner self-motivation. Self-motivation also placed second when youth were asked with whom they usually prefer to participate in physical activity; friends took first place. Self-motivation was also mentioned in matters such as watching athletic events or joining OSNs. Again, the reason behind inactivity among Saudi youth was blamed on self-motivation as the first reason; then came the role of the parents and close family members and friends. The participants' answers were in general revolving around the closest network for youth which includes family and friends in most of the answers. But the answers with regard to communication through OSNs favoured friends. Friends did not necessarily include friends of the same sex. Though having a friend of the opposite sex is not welcomed by many in the Saudi extremist religious society, OSNs opened the door for that. This was reflected in the survey responses where participants noted the influential role of friends of the opposite sex when it came to exchanging emotional support to

participate in a physical activity. For some participants, friends of the opposite sex tied with the parents.

It is important to note that when obtaining advice about health and nutrition, the majority suggested they would seek the help of a coach at a fitness club.

According to the online surveys, the roles of close family members (including cousins), and friends (including friends of the opposite sex) play the highest role in increasing the participation of youth in physical activity. Moreover, the best way to increase physical activity participation according to youth is by providing extra venues and facilities for both genders at schools, universities and outdoors. Finally, the next best way to increasing awareness of the value of physical activity in the Saudi culture is through sports and athletic events where everyone can take part, either as a participant or as an observer.

Friends' influence according to the online survey was highest in most of the questions. It showed that 37 per cent chose to participate with friends when participating in a physical activity. This indicated the interest of the majority of the participants of the survey in team sports where they could meet their friends and share hobbies together. About 24 per cent of participants agreed that they would share their personal problems or obstacles with their friends, and 12 per cent said the same about their friends of the opposite sex.

Friends also seemed to fill free time for the majority of youth (46%). In addition, 21 per cent said their friends encouraged them to participate in OSNs, second only to self-motivated reasons (61%). Friends also came in second in encouraging participation in physical activity at 21 per cent; again after the self-motivation, which was 54 per cent. As for watching sports, 41 per cent said they liked to watch sports because of self-motivational reasons, and 21 per cent said their friends

encourage them to watch. Around 35 per cent said that if they were offered several invitations to participate in physical activity, they would go for the one received from their friends. Though friends meet at school and during their free time, 55 per cent of the youth participants said they also speak to their friends on OSNs and 13 per cent to their friends from the opposite sex. About 54 per cent said they interact the most with their friends in OSNs. Friends were leading again with 32 per cent as the category they mostly communicated with through youth smartphones, and in WhatsApp specifically, 52 per cent said they communicate with their friends too most of the time. Please see Appendix (E) for additional data on the short survey.

In-person interviews further elicited participants' reliance on friends as significant motivators and influencers in physical activity participation. For example, one of the female participants said, "I only knew about the fitness centre I joined from my friend." This shows how word of mouth, especially with women, tends to spread information within the female society in Saudi since female physical activity centres and clubs are not promoted publicly due to societal and cultural restrictions in the country. Female participants between 18-24 years also mentioned that they were introduced to smoking and shisha (smoking hookah) because of their friends. "It's part of socialising," one of the women said. Yet other participants explained that they have groups in their WhatsApp application to plan training and sports tournaments with their friends.

Another participant said the following*:*

> I discovered that some people go hiking. Nobody knows about them. I heard from a friend. We don't know about these things. I'd like to go but nobody encourages you here. The on-going trend is to get a trainer to your home and invite your friends.

Another male commented on the role of his friends: “I enjoy playing sports with my friends. If I didn’t have someone to go with me, I'd probably give up.” When I asked one of the participants if his parents attended his tournaments, he said,

> Only my friends. I don't tell my family about it because they are interested in other things. My relatives are interested in different things. I can't tell them to come because they wouldn't. Besides, the time of the tournaments was after Magrib [prayer after sunset] prayer.

Yet another emphasised the role of friends in this quote: “One of my friends encourages me. She likes to choose fun things. We love to try things together. We tried weightlifting, windsurfing and volleyball. It was fun.” A female participant also explained that the use of OSNs helped her find places to train in different cities since she lives in the Western province but goes to the Eastern and Middle provinces to visit her family. She explained that a long time ago, one of her friends used to practice yoga with her at a fitness club in the Eastern province. After a few years, she wanted to become an instructor and her friends started supporting her and voting for her on OSNs until she won the club’s award and became an instructor due to her friends’ positive comments and feedback. She said she was proud of her friends because there are not a lot of Saudi women who take physical activities to the next level like she did. She said being considered a role model encouraged her other friends to follow too.

The NSSS survey supported the importance of friends’ influence and how spending time with friends occupies the majority of the day for youth in grades 10-12. In that national survey, a whopping 97 per cent chose watching TV as the most enjoyable activity, and following that was socialising with their friends with 41 per

cent, and third came physical activity with 34 per cent (see Appendix J for additional information).

5.4 The role of institutions in facilitating youth physical activity

It is important to introduce and acknowledge the role of institutions both public and private providing and facilitating physical activity in the country to better understand what each structure provides and their means of exchanging information and providing facilities and services to youth such as the Ministry of Education (MOE), the GAS, and sports media which run under the umbrella of the Ministry of Culture and Information (MCI).

5.4.1 The Ministry of Education

The MOE is one of the important institutions providing information, emotional support and indoor facilities and venues within its schools' premises. But that of course is only for men, who are allowed to easily participate in physical activities such as football, basketball and the other newly introduced physical activities offered by the NSSS project to increase the physical activity in Saudi governmental schools for men and to introduce men to sports such athletics and swimming. The NSSS project is a new initiative launched by the former MOE Prince Faisal ibn Abdullah and aimed at several goals including increasing the participation of youth. Though studies and research have been conducted to launch similar developmental projects for women, these projects cannot take place unless they get final approval from the minister or a royal decree. Several officials who worked for developing PE as part of developing education for youth in schools revealed several factors.

Given the important role of parents, PE teachers, PE supervisors and principles as moderators and influencing role models and figures, I used the

interviews conducted with these individuals through the MOE's NSSS project. The NSSS was the first national school strategy to be implemented in Saudi Arabia. The strategy of the NSSS can help explain how youth exchange resources within their school and home environment. Hence in addition to the data collected in the course of my own study, additional material was obtained to help form a better assessment of what parents, as well as PE teachers, PE supervisors, principals and students from Jeddah (Western Province), Riyadh (Middle Province) and Dammam (Eastern Province), were interested in with regard to increasing participation in physical activity among youth. The NSSS material included structured interviews and was obtained and delivered by the Saudi National School Sports Strategy (NSSS) team in November 2011 and was given to the participants upon my request and after gaining approval from the MOE under Prince Faisal in Abdullah and the NSSS project supervisor Dr Mohammed Alruwashid. These five segments (i.e., parents, PE teachers, PE supervisors, principals and students) play a significant role in the youth social networks structure, as the individuals that compose the segments are moderators and form an influential structure.

This section delivers the results from the face-to-face interviews conducted through the MOE's NSSS project with the parents, PE teachers, PE supervisors, principals and students from Jeddah, Riyadh and Dammam. The NSSS included interviews with principals (n=20), supervisors (n=12), PE teachers (n=12), parents (group of six fathers, group of six mothers) and male students from public schools (12 mini focus groups n=380). The students were from grades five and six (n=136), grades seven through nine (n=119), and grades ten to twelve (n=125). Table 5summarises the participants in the NSSS face-to-face interviews.

Table 6

Participants in NSSS interviews

	Parents	Principals	PE Teachers	PE supervisors	Students
Number of participants	6 Fathers & 6 Mothers	20	12	12	12 focus groups = 380

After eliminating the questions not relevant to my own study and including the results related to the role of the structure, the interview findings suggested several key highlights per segment.

Regarding PE supervisors, the NSSS found that there are no real criteria by which PE supervisors can judge the performance of PE teachers. Nonetheless, supervisors still try to invent criteria by visiting PE classes in schools and observing the performance of teachers and students at the end of each semester and sending the data to the MOE. With regard to the curriculum, PE supervisors believe it is mostly theoretical and unsatisfactory, and hence they have not implemented the curriculum in most schools because it is not realistic; in short, the curriculum is not taken seriously by teachers or students since no pass or fail grade is given. The report also stated that there is no direct communication between supervisors and MOE, so supervisors can only contact the regional Department of Education, and hence issues and concerns are usually neglected. These supervisors also believed that PE teachers are not dedicated and work less because of the low salaries and lack of incentives. The NSSS report proposed an increase in the budget assigned for school sports and in the number of PE supervisors and inspectors because there are only two supervisors for each region. In addition, the report states that the PE teachers should seek students' approval because it is crucial if the students are to cooperate in class and that the curriculum should be less theoretical to attract students and make it easy and applicable. The report

concluded that the MOE should consult PE authorities before building public schools to ensure it includes the facilities that will serve most efficiently and effectively.

Regarding the school principals, the report found that principals seem to have an underlying belief that PE and sports are inherent to the health, performance and behaviour of students, but there is no example of a school that has managed to make a serious PR effort to encourage parents and the private sector to support it. The interviewed principals typically spend 10-20% of their time working with PE and school sports staff and directly handling the management in most cases. Some principals considered sports facilities at their school excellent, and others stated they do not have any, which makes the teacher frustration to be a partial cause.

Activities between schools are often limited to football and take place rarely at some schools. Parental participation is minimal overall. Principals also believed that support from parents and the private sector is minimal, though schools with good public relations enjoy good community support.

The NSSS report found that PE teachers in Saudi Arabia are proud of their work and want to improve, but lack the training, expertise, tools and infrastructure to properly implement the curriculum, and are not motivated enough to make significant changes to the system or have a say in improving it. The PE teachers felt that parents should show interest and encourage their children to do sports. One PE teacher claimed that the supervisors at the training programmes were not experts. Generally PE teachers felt that the curriculum is complicated, not applicable and often unsatisfactory. One respondent created his own curriculum, which has been applied formally in Saudi Arabia, but it is still in need of expert instructions.

According to the NSSS, most parent participants responded that they take care of their children’s sports activities themselves. Although school sports are important

for their children, parents were not satisfied with schools' facilities and felt the activities offered were not sufficient for good health. Parents thus preferred taking their children to participate in physical activity outside school in places like sports clubs. In addition, the majority of the mothers responded that they had not personally participated in school sports themselves. Most of the fathers and a few mothers responded that they had been physically active in school sports, having joined sports/groups in school, for example jogging. Most of the parent respondents said they had no trust in sports institutions because the institutions would just collect money without decent services and/or properly caring for the children. Even those parents who had trust felt that, generally, improvements are needed. Mothers hence tended to disagree on allowing their children to attend sports in school after school hours. The interviews also showed that parents felt a need for better facilities and playgrounds. Two of the parents said they would be willing to help pay for improvements; others suggested their children needed more encouragement. Some parents also demanded a PE supervisor in every school.

Finally, student participants felt that the main barrier to playing sports is lack of infrastructure. Students were dissatisfied with the school curriculum, and the support and performance they received from their PE teachers was deemed weaker than it should be. Many students mentioned a lack of family support; a few mentioned lack of time and a few others mentioned factors such as lack of motivation, lack of institutional support and logistical difficulties. Most of the students responded that they play on the street, in sports clubs, in school or stadiums. A few mentioned the sea or their garden. Most students listed their top activity as playing sports, particularly football. The list of activities also included studying, praying, eating, watching TV and playing on a computer or PlayStation.

According to the NSSS, 73% of the 380 students interviewed from all three provinces believed their parents wanted them to be better in sports, and 81% believed their peer students were excited to compete in sports. Of the 380 students, 60% were not happy with the number of classes of PE they take in a week in their schools and wanted more, and 57% were not happy with the sports facilities provided in their schools. When they were asked what they wanted to be when they grow up, the highest percentage (23%) said they wanted to be sportsmen/athletes, 22% said engineers, 21% said doctors, 11% teachers, 11% armed forces, 4% businessman, 3% government employee, 2% no answer, 2% sports teacher/coach, 2% scientist and 1% farmers.

Students were also asked about reasons behind not considering becoming a national athlete/ pursuing a job in coaching/ or teaching sports. Twenty-six per cent said because they just never thought about it, 24% said they didn't realise that sports could be a career, 23% said because unless you are very famous, there is not enough money in it, 21% said people in my family/society would never allow me and 20% said they fear they would have to retire early due to getting injured.

The most preferred physical activity is team sports, specifically football at 96%. In addition, the interviews showed that schools are playing a small role in encouraging sports, and that these students felt that PE in school is fun and interactive.

When students were asked what type of sports first comes to their minds when they hear the word 'sports', 92% said football, while the rest said basketball, volleyball, swimming, athletics, handball and martial arts with 8%.

When they were asked what would motivate them to consider a career in sports, 90% said if it will be a lot of fun, 89% said spending your life in something

that's healthy, 86% said if they will become famous 85% said if it included a lot of traveling, 85% said if they will become rich, 84% said just the feeling of getting medals and winning and 80% said if it didn't involve too much studying. However, again 76% said their parents get angry if they play sports too much, and that was the highest reason that would prevent them from pursuing sports as a career.

The frequency with which students reported playing sports was also an area of concern in the NSSS project. Appendix K shows both the frequency and space in which students play sports most.

When students were asked what activities they do to get better at sports, 60% of the respondents mentioned practicing after school, at home, or somewhere else, 48% said they watch documentaries on sports, 33% visit websites to read and learn about sports, 31% read magazines and newspapers about it, 16% build muscles at home/club with weights, and 7% do aerobics exercise at home or somewhere else.

The data provided by the NSSS suggest that youth are excited to participate in physical activity, but are prevented from doing so because of several main reasons, the most pressing of which are lack of family support and then lack of facilities and infrastructure at school and outside school. The level of support may vary depending on the background of the parents. Some of the parents did not have interest or did not get involved in physical activities, especially mothers. However, some of the parents who had managed to study abroad or had been exposed to the western culture as a result of having one parent from abroad or of simply traveling abroad tended to reflect their awareness of the importance of physical activity participation for their children.

Hence family and school appear to be the most influential structures, with friends closely following because youth tend to spend and enjoy most of their leisure time with friends. The role of religion is apparent, as they are consistent in spending

time every three to six days reading the Qur'an, in addition to praying their daily five prayers.

In addition, after interpreting the data delivered from all five groups, analysis revealed a lack of consistency in implementing PE in schools and enhancing the participation of physical activity in school environments. Motivation to participate and develop school sports is missing from the students, the PE teachers, the school principals and finally the PE supervisors at the MOE. Moreover, the curriculum is mostly theoretical, which makes it hard for the PE teachers to teach and for the students to apply. Students' frustrations do not seem to have reached their PE teachers, because there is no way for them to express or share their concerns. In turn, the PE teachers' frustrations are not reaching the school principals, again because there is no method for sharing concerns. Principals seem to care, but not to the extent they would raise an issue to the PE supervisor. In addition, there are too few PE supervisors; only 217 PE supervisors are monitoring 11,000 PE teachers, and hence the supervisors can barely manage to file a simple report that is not based on PE developmental characteristics. PE supervisors simply do not have time to review concerns during the same academic year to see if their feedback was taken into consideration or not.

5.4.2 The General Authority of Sports

The investigations and interviews with the senior officials and officials from different sport federations and departments in the institution revealed interesting results. The GAS promotes physical activity only among its pro athletes who are registered under the organisation's umbrella through the offline platform. However, the senior officials such as the president and his team use OSNs to promote their activities and communicate with youth through OSNs. Major changes happened after

the London 2012 Olympics, when the new deputy president Mohammed Almeshil was assigned. The new president was active online and worked on enforcing the use of OSNs among the employees, giving the media departments and the federations' websites deadlines to implement the new platforms.

5.4.2.1 GAS online websites

As previously mentioned, to study a network, researchers tend to investigate the means of communication and exchange of resources between the individual and the structure forming this network. Since the GAS is one of the main influential moderators in these networks, I investigated how the GAS interact and communicate with youth through the semi-structured interviews with decision makers in the organisation. However, as a result of the important role that this organisation plays in the structure, as it provides services, support and information to youth in Saudi Arabia, it was important to go even further and evaluate one of the GAS methods of communication with youth: their sports federations' websites online. The Internet is accessed by millions of youth every day, and many of them enjoy surfing the web and going through sports websites; however, in order to make good use of this opportunity, it was necessary to determine what leads youth to choose one sport federation over the other. According to Alexa.com, a website that monitors the access of online users by countries to each page, the following list showed the most visited websites by Saudi Arabian users. Google.com.sa leads the top 20 most visited sites, and is followed by Youtube.com, Google.com, Facebook.com, Sabq.org, Yahoo.com, Twitter, BlogSpot, Live.com and Wikipedia.org (in tenth place), while sports pages, such as Kooora.com and Gulfcup.com, are ranked at 18th and 20th, respectively. Despite the few visitors to the GAS online sports federations websites, an evaluation

was conducted in three phases: in 2010, when I started my studies, in 2012 and finally in 2014.

In 2010, while looking for a suitable form of evaluation to understand the level of interaction between youth and the sports federations' websites online, I came across the following studies and found it suitable, as it met the requirements and covered the important elements of any up-to-date interactive sports website. The form was delivered and created to cover characteristics needed to evaluate interactive sport websites based on several previous evaluation forms such as the Sport Website Acceptance Model (SWAM) (Hur, Ko & Claussen, 2011) and others (Nicholas, Huntington, Lievesley & Wasti, 2000; Metzger, 2007).

Regular moderate-intensity physical activity has an important influence on health and wellbeing (Paffenbarger et al., 1986; Morris et al., 1990; Dishman, 1992). Health authorities recommend participating in at least 30 minutes of moderate-intensity physical activity on most (preferably all) days of the week (Pate et al., 1995; CDC, 2001). More health benefits could be achieved by participating in at least 20 minutes of continuous vigorous-intensity physical activity three times a week (ACSM, 1978). However, more than half of the adult population in Western countries does not meet these physical activity recommendations (Caspersen et al., 2000; Buziarsist et al., 2001). Therefore, effective physical activity interventions that can reach large population groups at low costs have been deemed necessary.

According to Miniwatts International (2006), there are more than one billion Internet users worldwide, and many of them use this new communication channel for searching for health information as Fox (2005) argued. The Internet has created a new opportunity to distribute interventions in a cost-effective manner. Therefore, health providers have started to disseminate behavioural interventions through the Internet,

including computer-tailored interventions (Etter, 2005; Oenema et al., 2001; Irvine et al., 2004; Bernhardt, 2001). Although computer-tailored interventions that provide participants with personal relevant feedback produced by a computerised expert system have induced significant changes in smoking, diet and physical activity (Brug et al., 1999; Skinner et al., 1999; Strecher, 1999; Kreuter et al., 2000), little evidence is available on the effectiveness of website-delivered tailored interventions. In the physical activity domain, some newly developed websites have been tested for their usability and feasibility (Sciamanna et al., 2002; Leslie et al., 2005; McCoy et al., 2005; Anhoj & Holm Jensen, 2004; Thüring et al., 2003). However, few studies have investigated the effectiveness of website-delivered computer-tailored interventions; they have focused mainly on specific population groups, such as diabetes patients (McKay et al., 2001) and the elderly (Hageman et al., 2005). Others have targeted physical activity information toward the different stages of change (for example, goal setting, activity planning, self-monitoring, reward, or using cues) but did not tailor their studies to other behavioural constructs or determinants at an individual level (Napolitano et al., 2003; Marshall et al., 2003).

The interactive website, with tailored physical advice, was able to increase physical activity in motivated volunteer participants in comparison with non-intervention control groups. These results indicated that website-delivered physical activity interventions can be effectively and feasibly implemented in real-life situations.

To meet the objectives of the study, the form delivered for this research focused on the following points: availability, activity, interaction features through the use of links to online social networks, number of visitors, up to date valid information

and having a real person to reply to visitors' concerns and to exchange information with. An evaluation of these websites is depicted in Appendix (L).

Website evaluation summaries were formed during each of the three periods in 2010, 2012, and 2014. In the first phase (August 2010), the GAS did not have a website, and searching for the sports federations that ran under the GAS was not an easy task since the federations were not linked together. Each federation had its own rules and regulations with regard to their website, and hence each was different than the others in several aspects such as up-to-date information provided, profiles of athletes, awards and statistics and methods of interaction with the website visitors. Some of the federations provided me access to their website, but others said it was under construction and that they would provide it when the website was activated. While searching Google for links to the federation websites in English, only those that supported the English language appeared, and while searching in Arabic, the first thing that came up was news articles in newspapers, or in a few cases links from sports forums where people had shared the link with one another.

It is also important to mention that when national athletes were asked if they were familiar with their federation's website, the majority said no. Few of the athletes knew about the website all. Those who did said they were not interested in visiting it because the website did not provide up-to-date records or highlight any historical links to their achievements or tournaments. These athletes also mentioned that when they want to communicate with their federation officials, usually they do so through phone or through face-to-face meetings, since the culture of online and email exchange is not as active in Saudi Arabia.

First of all, the website evaluation shows that out of the 31 Saudi Arabian sports federations, only 13 have available and active websites: the Saudi Arabian

Athletic Federation; the Saudi Tennis Federation; the Saudi Arabian Fencing Federation; the Saudi Sports Medicine Association; the Saudi Arabian Judo and Taekwondo Federation; the Saudi Squash Federation; the Saudi Arabian Equestrian Federation; the Saudi Arabian Homing Pigeon Racing Federation; the Paralympic Committee for Special Needs; the Saudi Arabian Physical Education & Sports Federation; the Saudi Arabian Cars & Motor Federation; the Saudi Arabian Deaf Federation; and the Saudi Arabian Anti-Doping Federation. The rest of the websites were either non-existent or under construction, including the website of the Saudi Arabian National Olympic Committee. An author of the page was found only in the Physical Education & Sport Federation website, even though the author information is a very crucial aspect for an interactive website to ensure whatever comments or inquiries are delivered to the websites are answered or at least taken into consideration. Alexa.com was not very good in monitoring the pages that are below 100,000 in their ranking; therefore, the website was not useful in this case for monitoring the Saudi Arabian sports federations despite the website being highly recommended for monitoring visitor numbers. The evaluation forms would benefit from having additional sections, such as background on the sport, rules and regulations, hierarchical structure of the federations, biographies on athletes, coaches, board members and annual programmes. The websites lacked links to social network websites such as Facebook and YouTube, which prevented visitors from the option of exchanging information with one another. These websites did not show that they target a certain age group or a specific gender. Only two supported English (Equestrian and Tennis).

Though the websites for Saudi sports clubs were not evaluated, a quick investigation showed that out of the 155 Saudi sports clubs that were present in 2010,

only 26 of them had websites. However, the researcher was advised that most of the federations' websites would be active and interactive soon, and that the GAS was working on the issue. Yet, activation depends on each federation adopting such technology and allocating a person to be responsible for its development and activity. Some of the officials explained that since many of the people working in the GAS are volunteers and have fulltime jobs elsewhere, some federations have insufficient staff or budget to dedicate to website design and maintenance.

In the second phase (August 2012) of website evaluation, despite the Saudi national team's participation in the London 2012 Olympics and the interest from many foreign sports organisations in the Saudi athletes' participation, the Saudi sports federation websites did not show any noticeable developments. The Saudi Arabian Olympic Committee website was launched for the second time with a new layout to attract fans again. It included social networks, and visitors were already sharing the news. Photos had also been uploaded. However, the majority of fans from Saudi Arabia or from abroad who were interested in the Saudi participation retrieved the news from English sports newspapers or from broadcasts published via Twitter through their own social network mediums. The findings indicate that fans were mostly concerned with up-to-date news that included more analysis and critical opinions rather than just the plain results of matches and tournaments.

The Saudi Equestrian Federation had also launched a new website with a new layout to coincide with the London 2010 participation. It is important to mention that this federation is the only one privately supported by a fund from the late King Abdullah, and hence it was ranked among the most successful federations in the country in terms of victories, participation and use of technology.

Again, despite the event of the London 2012 Olympics, I was told that the rules and regulations were sent strictly to all federations to launch their websites properly and to have them active and interactive as soon as possible. However, as of August, nothing additional was recognised in the websites monitored.

Finally, in the third phase (August 2014), analysis revealed great and immediate development following the appointment of the new General Secretary Mohammed Al-Mishil after the London Olympics. This development was something to consider since the previous secretary general and rules and regulations had not encouraged the use of technology to communicate. In addition, there was a preference for withholding information until it was approved by top members in a hierarchal structure, which led to delivering old, plain, and boring news to the reader. Al-Mishil, however, believed that the way to communicate nowadays was through technology, and since Saudi Arabia is a country with huge ambitions to develop, it was important to enhance technology and to reach youth through technology by bridging all the previous gaps, as Al-Mishil announced in the GAS meeting with the federations in early 2013. He encouraged all federations to activate their websites within a year, and then he followed up with their progress. Hence an additional seven federations launched their websites, and others changed their old links to new ones with a new layout and dedicated a budget for their website and people to monitor them; the process seemed slow but clear since 2010. However, since Al-Mishil resigned in January 2015, it is not clear whether his strategy with regard to the use of technology and OSNs throughout the GAS and the Saudi National Olympic Committee will remain.

In addition, an interesting study was conducted by one of the Saudi Arabian Olympic Committee (SANOC) employees on the use of technology among the

institution. Its findings are discussed in this section because this study was the first of its kind and it overlapped with the area of interest in my own study, showing why, for example, the employees at both the SNOC and the GAS tend to use or to dislike using OSNs to communicate and exchange resources. Alomar's (2013) MBA thesis was on the possibility of implementing electronic management within the GAS. His work concluded that facilities provided to implement an e-governance within the Saudi Arabian National Olympic Committee (SANOC) were present. But this has limitations, which makes it hard to implement properly. His research also concluded that accessing information is not easy given the limited use of emails inside the SANOC. His study, which was based on structured interviews with 60 officials in the SANOC, also revealed how the committee lacks electronic software development technicians and consultants, and how the workshop to enhance the use of technology does not meet the required goals. The strategies on how to use the technology within the institution are also unclear. However, Alomar's study shows that the participants who work in the NOC had great interest in learning and implementing e-governance because they believe it will enhance their work and save them time while they exchange information with each other.

Alomar (2013) stated that 52% of the participants who work in the SNOC were bachelor-degree holders, 7% were MA holders and the rest held either a diploma or high school degree. Of his participants, 63% were 30-40 years old, 18% were less than 30 years old, 15% were 40-50 years old and 2% were above 50 years old. The majority are thus at least bachelor degree holders and in the range of 30-40 years old. According to online usage statistics in Saudi Arabia, this age group is the second highest active group of users on OSNs. Even though they were not provided with enough workshops and most of them had attended only one or two workshops on e-

governance, Alomar found that 47% of his participants were highly knowledgeable on the use of technology and e-governance on a scale from *very low*, *low*, *medium*, *high*, *very high*. Thirty-one per cent had medium knowledge, 18% had very high knowledge and 2% had very low knowledge on the use of e-governance. This also shows that not only youth but also older generations over the age of 25 are interested in the use of technology and computer assisted communications and that they tend to learn by themselves with whatever is provided in order to facilitate their work and communicate with each other within and outside of their institution.

During the data collection, the researcher asked the senior officials and their co-workers if they use OSNs. This question revealed that a large number of senior officials were still beginners and did not even feel that it was important to be part of OSNs or to use them. Some explained that they have a lot of paperwork and so it was better to perform communications through fax, as many of the governmental sectors still deal with faxes only and approve faxed records as official. However, the younger generation working in these sectors believed that faxing is not efficient anymore, urged the use of OSNs and in fact were looking forward to the development in the institution and to implementing a network through which they could communicate and discuss things in a more efficient way. One of the officials, for example, talked about the use of Whatsapp:

> I have several groups for family, friends of course, but also for work. And because it's private, I get to share my views and arrange meetings and talk in discussions with the members I have in my groups, which makes life much easier and saves a lot of time.

Another official spoke with pride about being a pioneer in introducing an online network among his employees in the federation:

> A lot of people may think it's simple, but it really made our life easier to communicate and send important documents and news to one another through our internal system, and of course through our groups in the WhatsApp too, as it is very useful especially if we are at tournaments and need something or we need to ask about someone.

However, another official stated that when it comes to OSNs and technology, there is always a problem in the budget which delays it, not to mention lack of data written electronically for all the federations and their players. He described the situation as follows:

> It's easy to do, but you need skills and experts in the field to collect and create the data and transform it electronically and then train all the employees to update it consistently. All these need time and a very good budget of course, and that's a thing not all the federations want to do now. A lot of them would rather spend it [those resources] on the training camps or similar things.

WIFI was implemented only five years ago according to one of the officials, but more than one agreed that the institution is definitely moving forward with technology and communication.

5.4.2.2 How GAS deals with women

Although it is called the General Authority of Sports (GAS), the organisation deals almost only with men. The findings showed that the GAS does provide advice for women who approach the organisation, but nothing more. On the participation of Dalma Malhas, the first Saudi female athlete to compete in the youth Olympics and winner of the Bronze medal in the equestrian competition, the GAS statement was simply, "We didn't send her, and she was invited due to her international participation

and hence was there." A few years later, two Saudi Arabian female athletes, one in Judo and one in athletics, competed in the London Olympics. At this point, the GAS statements slightly changed, and the organisation said that "due to the pressure of the IOC, we had to include women and these are the ones we have and know have been practicing so it will be good experience for them."

How do institutions cooperate to enhance participation in physical activity? Officials from both institutions, the MOE and the GAS, confirmed there is cooperation between them. There are, for example, representatives from the GAS who work as consultants in the NSSS to ensure it meets the needs of both institutions. These representatives in this study were referred to as officials from the NSSS. Another example of cooperation is when the two organisations supervise a tournament in a school and use the help of pro referees to run it. Participants also mentioned that sometimes PE teachers would recommend some students to be considered for their talents or skills and request help to nurture the students' abilities professionally. Apparently, PE teachers fail to make their voices heard to the top officials in their hierarchy and find it difficult to pass their PE supervisors and school heads. During tournaments, though, PE teachers can successfully make requests if representatives or officials from the GAS attend and have good communication with the head of that school.

The municipality of the city also facilitates physical activity participation. However, an initiative in 2013 by the municipality to launch parks or playgrounds in the districts for youth to walk or play football or tennis in failed. It had been the first initiative of its kind. The failure was due to the lack of cooperation between the municipalities and the GAS and the MOE. Youth activists and youth participants were disappointed because the ground was not safe to begin with for youth to play on. An

official from the GAS noted that municipality leaders failed to respond to or consult with GAS officials, and when the GAS found that no one was approaching the new venues, the municipalities attempted to draw on the help of the GAS to fix the problem. One of the physical activity activists elaborated on this event. When I commented on the good news of having walkways in the city now, the activist gave the following response:

> This is not enough. Having walkways does not mean we can walk. People bring their hookahs and dogs to the walkways and sit in the middle, blocking the way to everyone who wants to run. For example, if you find that a walkway is always crowded and has no clean bathrooms and it is not maintained well, your motivation will lower. If you have 80% motivation, it will get lower when you discover there are no clean bathrooms and get even lower when you find people sitting in the middle of the walkway. Eventually, you will lose interest because nothing is attracting you.

He continued to explain as follows,

> You have to realize that there are people who love tennis, people who love walking, and those who like to sit on the beach, etc. You need to have a large area to accommodate all these activities. You don't open a small stretch of land, the size of a tennis court, and tell people go practice your hobbies. When the new Corniche was opened, we wanted to go and run. Shockingly, we could not find a single space empty; people were everywhere. In Jeddah, we have basketball courts. There are plenty of them, and people know where these courts are located and they know these courts are for basketball only. You never see people walking in these courts or sitting there. They would be called lunatic.

Another physical activity activist added, “I live near the Aramco walkway at Al-Rehab neighbourhood. The only downside with this walkway is the dumpster that was put at one of the corners. When you pass by, you can smell the odour emitting from the dumpster.”

5.4.3 Sports media

Sports media seems to influence not only youth participation but also interest in the field. According to one of the officials, “if you go through all our sport sections in the local newspapers, here you’ll only find people talking about football problems. How could I encourage my son to read it or try out new things based on what’s in here? It’s a total turn off.” Youth participants also confirmed that they are not interested in reading the Saudi sports news because it does not encourage or promote participation, but only encourages racism. “Every day there is a sport columnist attacking another sport columnist in another newspaper, there is nothing in it for me,” said one of the male youth participants. In the latter example, the participant was aware of the negative role this plays, however this is because of the high interest in football, which makes it the selling point for these newspapers, and what creates challenge and competition between them.

There is a lot of news to be covered, but one particularly popular topic is the participation of Saudi women in physical activity. This topic is a sensitive area, as not long ago it was completely taboo along with topics such as the royal family, Shia and Saudi women driving. One of the physical activity activists online and media personnel made the following comment on the topic:

> I got a lot of attacks. We did a full report on Sarah, the Saudi runner. Most criticism came from Al-Qassim and Riyadh, where many there hold

fundamentalist views on religion. The views from Jeddah and Makkah were less fundamentalist, which shows that people there are more open-minded. The London 2012 Olympics is another indicative example of the animosity surrounding female athletes. The competition witnessed the first participation of women from Saudi Arabia. It was not announced or talked about until the women showed up in the opening ceremony. Even then, the local Saudi newspapers were not allowed to talk about it, even though the women were doing interviews with other foreign new agencies. I was the spokesperson for the Saudi NOC during the event and was requested in a friendly way not to report anything on the women. Only when the games ended was I told that I was free to share my thoughts and experiences. I was informed that the decision had been made to protect the women, because the society was not ready yet for such an appearance. This was true, and the negative reaction was overwhelming for the women, as is discussed later when reporting findings from the digital ethnography section.

5.4.4 Role of private institution in facilitating physical activity

This section highlights the importance of the private initiatives by the public and businessmen to launch centres for the public based on their needs. Male fitness centres are available and easily promoted through the media in both platforms, which makes it easy access for youth who can afford these resources money wise, time wise, and transportation wise. The case for women is different. Female fitness centres are something new to the public, and these centres were only licensed to open in 2015. Before that, there were few fitness centres for women, and they existed only in the big cities and provinces such as the Western, Eastern and Middle provinces. Instead of the commercial license, these centres had licenses which meant they were working under the supervision or permission of a hospital, or in a hospital. Others found ways around

the law to open centres for women, but many were eventually shut down due to operating illegally. Some centres were opened in houses and trained only close friends or friends of friends, of course without spreading the word for fear of being shut down or fined.

When it comes to female fitness centres, one of the female officials interviewed suggested that defining goals for youth is important, because the teen years are a short period of time that will not last. She said,

> We always tell our trainers never to tell girls things like 'Focus on your weight. You should run to get thin.' This is not our goal and has never been. We want girls to exercise to become more active, not to become thin. We noticed that girls become more confident when they feel like that, and they get more sociable and interact with others without feeling ashamed of their bodies. Their mothers tell us they have noticed a big change in their girls' behaviour. They have noticed that their girls do not fuss a lot as they used to be before signing up for the gym. Unfortunately, the society has a narrow-minded view of girls' exercise.

Since private institutions such as these fitness centres were in general costly, I asked one of the participants if the factor of transportation was an obstacle for women to join. She said,

> The girls we train come from a certain section of society. They don't have a problem with transportation. Most of them go to private schools and they are capable financially and have drivers. Some of them come with their mothers, but the daughters are Saudis while their mothers are non-Saudi. Non-Saudi mothers accompany their daughters to the gym and work out with them. They also let their daughters go to the gym during school or college examinations.

Though this is just one example of the clubs available for women, it indicates how these centres target a certain group of women in society who are probably the same women who attend the private schools or international schools and already have been introduced to physical activity there. These centres are just a bonus for them from their families. The women who attend the governmental schools are thus still left with few to no participation options beyond practicing at home. This category of women is a large number considering the ratio between female governmental schools and private and international schools (see Appendix O).

Nevertheless, when it comes to promoting news about female fitness centres or gyms, according to one of the female officials, Whatsapp is known for its small networks and privacy:

> We send messages through Whatsapp or through the word of mouth. The latter is one of the biggest marketing tools among women. We also distributed brochures in banks and malls. And this is how we get a lot of friends subscribing together at the gym.

During the interviews, the youth male and female participants also pointed out that WhatsApp is the most preferred media for chatting with friends about personal things and creating groups for physical activity or friends from different schools. One of the women commented,

> I have groups for the girls who join me for basketball, and I have others for my friends at school, and for my family members. Sometime we don't have time to talk because of our homework, but we will always read it and reply later on.

The survey in addition stressed an important role of the fitness trainers and coaches in private fitness centres in Saudi. The highest percentage of youth (36%)

agreed that when seeking advice on physical activity participation or health and fitness, they would ask their coaches or fitness trainers. The second highest percentage (16%) said they would eventually ask physical activity activists in OSNs.

One of the male youth commented on the role of his coach not only in his participation, dedication and commitment in physical activity participation but also in his lifestyle and religious practices. He said,

> I learned a lot from my trainer. He is an educated man and has a master degree in his field. He influenced me. He was like a role model to me. He always performs prayer on time. I learned this from him. Before meeting him, I used not to perform prayer on time and sometime miss the prayers, but after knowing him, I started to be more observant. He was following with me on my performance at school. My trainer is originally from Africa. He is a big, strong man. If my father saw me with him, I would be in trouble. I used to lie to my father and tell him I'm not with the trainer and I'm with some friends when in fact I was with the trainer. You know how society views Africans here.

Additionally, the private sector provides an alternative way for male youth to participate in physical activity besides the gyms and fitness centres - playgrounds to rent. Sometimes they belong to a businessman in a far area from the city, and on other occasions in the backyard of one's house who takes it as an extra income when rented by youth. These rented playgrounds or fields are not new, yet it is popular and affordable, as most of the male youth in the study confirmed. One of the men said,

> These playing grounds can be found also at nearby neighbourhoods, but their prices for two hours range from 400-500 Saudi riyals. For us it is fine. We are

> a group of employees and each one ends up paying 20 riyals. It's pretty reasonable for us. Some students can't afford it.

Though the private sector seems to work alone, some however, according to the interview with officials, showed interest in cooperation to enhance the level of awareness among youth. One of the officials, for example, said,

> We organise campaigns with the Ministry of Health and allow the general public to take gym classes. We measure fat and allow people to participate and taste the flavour of fitness. When the ministry organises a campaign, we will be given a booth where we distribute flyers on health. We do this every month because it is part of our social responsibility.

Said one of the participants in this study and owner of a fitness centre.

The same person continued to talk about the collaboration between himself and other physical activity activists in OSNs and the governmental sector. He observed the following:

> We have launched several campaigns such as "Your Health Matters" together with the University of Taiba, King Abdulaziz University, and the Ministry of Health. We have participated in several campaigns. . . . ‘Staying Active is Healthy’ with King Abdulaziz University was the best because it was a comprehensive campaign dealing with mothers’ and babies’ health, diabetes, high blood pressure and general health. It was focusing on your health in general. Changing lifestyle by sports and changing behaviour is the best mechanism for you.

5.4.5 Lack of value for pro athletes & physical education teachers

First, on different occasions, the value of athletes was expressed negatively and as one of the reasons why families do not encourage their children to join sports. Athletes, for example, believed that if they were not excellent footballers then they had no value in the society, because they would always be driven to choose football above all other priorities. According to one of the pro athletes,

> In Iran, a country with similar culture and religion, they deliver a great value for their athletes, despite the fact that we support our athletes and provide them with care and training much more than they do; yet, they know how to promote their athletes and give them value. Each family is proud for having an athlete among them, while here the media would generally discuss the victory when it happened and then nothing else. A lot of talk has been happening regarding the development and cooperation, but all with regards to strategies and planning, never really touching the value of athletes in society.

Another youth participant explained that he didn't want to become a pro athlete because pro athletes are not supported or respected in the society and have no guaranteed future financially. "I'd rather continue studying and just practice physical activity as a hobby to stay fit and healthy," he said.

The government body of the GAS and NOC supports pro athletes, but when it comes to money, only pro athletes enjoy having a salary. Any other athletes who are registered are considered amateurs and receive money only during competitions or when traveling for training camps ahead of a tournament or championship. Footballers and a few basketball players enjoy the opportunity of playing for a club outside Saudi Arabia. The rest do not enjoy such options and are considered amateurs. The equestrian team had some private funding, which was launched under the late

King Abdullah due to the team's high expenses and the excellent performance of the team riders in various major local and international events including the Olympics. No other teams are financially sponsored because the door for privatisation is not yet open for the other federations. Some athletes have managed to get scholarships to train and study abroad, but again, going abroad is rare and has happened only in one or two federations. All these factors make it hard for families to allow their children to pursue a pro athlete career and let go of school. Those who continue to study while training as a pro find it hard. Several participants explained that they always find it difficult to balance studying and training, and they reported that whenever they have to sacrifice one, it ends up being their studies because of the coach's influence and their ultimate goal to reach professional status. According to several athletes who study while playing at the pro level, they usually get to train abroad and miss classes or exams and have to make them up later. Making up exams is not easy, and the athletes have to go through a lot to be granted a leave form. One of these athletes stressed,

> My parents pressure me sometimes that I have to let go of these sports commitments and focus on my study, especially that sometimes my friends who are in my age passes me and I end up delayed because of my travels with the team. It's not easy to live with that.

The undervaluing of pro athletes also eventually means that youth will lack role models, and thus feel less encouraged to participate, according to one of the physical activity activists online. The activist stated,

> Our problem in the Kingdom of Saudi Arabia is that we have a limited definition for sports. For us, sport is football only. There are more than 250 different sports around the world. The media and sports federation should

> raise public awareness of the different types of sports. The other problem we have is that we only fall in love with a sport when we see that one of our people excels at it. When Ahmad Brada from Egypt won the world squash championship, everybody in Egypt all of a sudden wanted to play squash. If one of us excels at athletics, the others fall in love with such sport. In fact, we want those heroes to be the role models for this generation.

Secondly, the value of PE teachers in the community seems to be almost the same or even worse than the athletes. An official from the MOE reported that PE teachers had complained to him about that on several occasions. He pointed out the disappointment these PE teachers feel:

> Increasing awareness among youth includes increasing awareness on the importance of the PE teachers. Unfortunately, in our schools we tend to ignore the PE class and if needed it is usually replaced by another math or science class. Because kids no longer respect it, it reflects on the PE teachers and they don't want to put an extra effort to make it more enjoyable or motivational for the youth, except for a few, of course.

The youth participants demonstrated this reaction towards their PE teachers, confirming their negative attitude towards the value of PE teachers. One of them said, "He didn't teach me anything. All he does is throw the ball at us and ask us to play without any comments or feedback or anything." This was happening in one of the governmental schools for men, but the same thing is expressed in many other governmental schools among men in Saudi. Another young man from a private school said, "He did not have any rules. We were playing without any goals. We just kicked the ball and ran after it."

It was not until recent years that becoming a PE teacher necessitated being granted permission from the PE department or holding a higher degree. However, because of the low value and respect the position holds, it seems that PE teachers are not encouraged to enhance or develop their skills further. According to the same official, some of the PE teachers get lower salaries than their peers despite the PE teachers sometimes volunteering to supervise physical activity tournaments during or after school hours for the students. Lack of emotional and financial incentives tend to put these teachers off from increasing awareness and participation in physical activity in schools, another official confirmed.

5.4.6 Decision makers involvement in online social networks

Decision makers facilitate and supervise physical activity participation in the offline platform, as their job position requires. However, it was not until the senior decision makers decided to join the online platform and the OSNs that officials working under them realised the importance of being online and joined these platforms too to follow their senior officials. This section confirms the role of decision makers who joined the OSNs in influencing youth in physical activity participation. Two representative examples are Prince Nawwaf ibn Faisal, former president of the GAS, who joined Twitter in July 2011, and the MOH, which joined Twitter in April 2011 and then inaugurated their first Health Award through OSNs in February 2014. Additionally, on January 23, 2015, King Salman was announced the new King of Saudi Arabia, and at that time he changed his account status, which was launched in January 2013, to King. This made him the first Saudi King to use OSNs. Following his example, gradually Saudi ministers followed, and more officials became more up to date with the new technology necessities of the era.

5.5 The role of religion

Religion can be a tool to encourage men to participate in physical activity. The role of religion and physical activity in Saudi Arabia was not investigated before this study, so it was hard to tackle as a topic and investigate the relationship between an individual's faith and physical activity, not to mention studying youth by observing their exchange of information in offline and online platforms. However, this study shows evidence of the influence of religion on the participation of physical activity. According to the data, religion's impact has positive and negative roles.

First, I outline the positive role of religion, which was discussed in both online and offline platforms through Islamic verses and sayings delivered by younger and older individuals. Almost all the ten youth participants mentioned enjoying participation because they know that God will reward them for having a fit and healthy body, and practicing sports such as swimming, archery and horseback riding made them proud for following Islamic recommendations. They all said both statements and recited them by heart. Their attitude showed that they acknowledged these benefits and supported physical activity, quoting sayings from the Qura'n and Sunnah. The role of religion was also apparent in the NSSS survey, as youth consistently spent three to six days a week reading the Qura'an, in addition to praying their daily five prayers. Both religious scholars and religious parents encouraged their children to walk to the mosque instead of driving, according to the participants.

Geography was a significant variable as well, because ethnic minorities such as Shia (Shiite) – who comprise 10 to15 per cent of the population and mostly live in the Eastern Province – tended to encourage their children to participate in physical activity. This is evidenced by the increasing number of health and fitness clubs in the districts, reaching 32 clubs in 2012-2013 according to the GPWY, as well as the

number of professional athletes from this part of Saudi Arabia and in various age groups representing the national team. A GAS official reflected on this statistic, "Shia districts are a fertile region and parents there like to make sure their children are involved in physical activity and excel in it, and when they do they celebrate it with pride" (see Appendix M, Saudi Arabia map showing the number of clubs in each province in 2012/2013 provided by the GAS).

Another physical activity activist commented the following online on the positive role of religion in promoting physical activity:

> Religion can play a positive role. A religious player is usually more disciplined – he does not stay up late hours, he doesn't do negative habits. Some players who are not religious are also disciplined. However, religious players are trusted very easily. In the Kingdom, everything boils down either to religion or tribe.

The activist's observation indicates that athletes who are more religious tend to be more disciplined and present a better-committed role model for youth

Another physical activity activist who uses religion to promote physical activity participation said the following:

> People and young men, even those who are not religious, their response was strong. I am talking about health awareness using religion. It's easy with religion. If you want to make a similar campaign in Europe, you can't talk about permissible and impermissible because people don't believe in that. This strategy is advisable. I talk about religion as a value. As Muslims, we are required to respect our values: be strong, be active and be invigorating. Religion is not only mosques and memorisation of the Holy Quran. And to do that I follow three steps: First example I talk about the life of Prophet

> Muhammad (peace be upon him), his health and his strength. Second, I talk about how Muslims love to be close to Allah, and they need to be active to do that. I warn them about diseases like diabetes, renal failure, and other chronic conditions. I remind them that they should be strong when they get old. Third thing, I get religious texts and link them with exercise.

Mosques also play a role in physical activity participation. A study conducted in South Carolina (Shakona et al., 2015) provided evidence that Islamic beliefs and behavioural practices influence the leisure and travel behaviour of Muslims in the United States. Another study conducted in Norway (Walseth, 2016) revealed that the Shia mosque that participated in the study had an active youth group with members from different Shia mosques, offering religious seminars and swimming and football activities. Practices such as these are not publicised in Saudi Arabia and are not reported for Shia or Sunni mosques. Unlike churches abroad, which tend to play an active role in encouraging youth to be physically active, such encouragements are not witnessed in the Saudi districts.

Nevertheless, since religion has a role in motivating youth to participate in physical activity, some institutions launch tournaments related to charity or hold events during Ramadan, the most religious month for Muslims during which they fast from sunrise to sunset. This relation is to ensure and guarantee the events receive more participation and support, evidenced through hashtags used to promote tournaments or physical activity, including words like “charity” or “Ramadan.”

Religion can be used to discourage women from participating in physical activity. Extreme religious scholars use two common statements to prohibit and ban women in Saudi Arabia from participating in physical activity: first, physical activity is against Islamic teachings because a woman’s place is at home; second, this is a

field dominated by men and there is no place for women there, as they are not supposed to copy men's attitudes or behaviours.

The majority of religious scholars aggressively use these sentiments to ban women from participating in physical activity, claiming it is a way of copying men's attitude, which is not encouraged in the Islamic religion or Saudi society. This encourages women to look even further into the topic to discover answers and explanations about participating in physical activity, to the extent that they educate each other on online social networks. I was surprised that female participants, even the younger ones, were aware of their right to participate in physical activity, and were very confident that their families and close networks religiously accepted by God, and participating afterwards.

One female official commented the following on the use of religion to ban female participation:

> All I can say is religion is interpreted by men for men's interests. The topic of girls' exercises is similar to the driving issue. I think men are afraid that women will be become stronger if they exercise. They don't care if girls get diabetes and blood pressure… Religion has nothing to do with women's sports but men try to create a link for their own interests.

5.5.1 The role of religious scholars

Several female participants acknowledged the role of the religious scholars who belong to the Committee for the Promotion of Virtue and the Prevention of Vice (CPVPV) and that of the country's religious police, as they are known by the media and public. Both scholars and police actively try to stop female participation by, for example, closing down fitness centres, shutting down indoor sports tournaments for women and verbally abusing physical activity activists in offline and online

platforms. Some participants also stated that when one media outlet started reporting news about Saudi female participation in sports, the commission threatened the journalist and warned him not report such shameful news, even though the offending news article was reprinted from a newspaper outside the country. On April 13, 2016, King Salman gave a royal decree upgrading the commission to a ministry and declaring the commission, which already reports directly to the king, no longer overseen by the interior ministry but exclusively by the monarch. This change is promising, especially as the decree instructed the commission to be gentle and tolerant in enforcing the law.

Religious police used to play a role in encouraging male youth to participate in physical activity and were supported by many Saudis, who agree that physical activity is a male-dominated field and women should not be invited. This shows why female participants in this study expressed that they do not like to follow them in OSNs. In addition, when the first Saudi woman was assigned by a royal decree as a member in of Saudi equestrian federation due to her achievements in the field and her international recognition, people were surprised. One young woman explained to see some of the views of these religious police change from being against sports for women, to admitting that sports is good for the women health, only after the decree, as “this makes us think twice towards what they say.”

The previous examples show how misinterpretations of Islam further gender discrimination by implementing their views on Saudi society, but online platforms provide evidence of ethnic racism as well. In January 2016, an incident of hatred against Shia minorities was reported when a handball tournament ended with the athletes fighting. The two clubs were the Alqarah club, belonging to Al-Ahsaa, a Shia

city, and the Alnajma club belonging to Alqaseem, a Sunni city. Videos and photos of the fight went viral on Twitter. According to the writer of the article in the Erem News (23.01.2016), Twitter fans suggested that the reason behind the chaos was potentially ethnic racism.

One online physical activity activist explained that this fight has roots in religion's connection to culture and heritage:

> It is not religion as much as it is religious heritage. By that I mean the accumulation of certain thoughts and practices that were passed to us from older generations. That is why we are a backward society. When Omar bin Al-Khattab, one of the companions of Prophet Muhammad (peace be upon him), conquered Al-Sham (Levantine), he visited the region and did not change anything there. The churches were left as they were, and the time of prayer for Christians was left unchanged. This is the true Islam. In the Kingdom, we criticise having churches anywhere around the Kingdom, but we build mosques all over the globe. In the Kingdom, when a Christian player makes the cross sign to express his joy at scoring a goal, he gets a warning. Why? Christians are supposed to get freedom to practice their religion. Why do we want them to embrace our sports culture? We also criticise anyone who puts on the cross. Some players have left the Kingdom because of this.

Whether the fight was caused by religion or religious heritage, some parents use religion to limit participation for both genders based on generational tradition. This was not mentioned often, but eight of the 10 youth participants acknowledged that their mothers would reference God's mercy and punishment or prayers to limit or prevent their children from playing for too many hours in the sun, participating in extreme sports or playing on the streets. Such sentiments included: "I won't be

satisfied with you,"; "I'll be angry at you until doomsday"; and "Promise me in the name of God"; and "If you love me and care about your mother's fear over you don't go." A young male participant explained that his parents forbade him from participating in kickboxing because he was badly hurt in a tournament. His mother said, "May God make you hate football," because he was playing during the afternoon while injured.

5.6 The role of online physical activity activists

This study's findings show that activists play a very important role in promoting physical activity in the Saudi society and among youth, not to mention among all the Arabic readers following them on social networks such as Twitter. They also encourage governmental and private institutions to follow and utilise OSNs to reach youth and share information. In fact, the timeline for the hashtags chosen for analysis in this research showed the important role activists play in promoting information among Saudis and how institutions such as the Ministry of Health retweeted posts by these physical activity activists and media accounts, because they do not have as many followers or as strong an online voice. Activists have also become public speakers and known personalities in the Saudi communities and among youth, as the government and private institutions invite them to give lectures to students in schools and universities and participate in community events to promote the cause. One of this study's major discoveries regarding the role of online activists relates to breaking down gender discrimination online, exchanging resources, and creating physical activity active networks in OSNs.

5.6.1 Breaking gender discriminations

This study's findings indicate that physical activity activists are seen as role models and break down gender discrimination by providing information for both

sexes, making it easier for young men and women to ask questions of specialists in the field. Several activists mentioned during interviews that young women often approached them in OSNs to learn and seek advice. Although their number is small, their influence is massive, because they are reaching millions of people, according to their Twitter accounts. According to one of the participants, who owns a fitness centre and used OSNs to promote and communicate information,

> I started in 2005 on Facebook. It was amazing how we got 5,000 members who liked our page in no time. Our page is very active. We started a year ago our Twitter account then Instagram account. But Facebook is my favourite because people have more freedom to write their questions and their problems and have more space than Twitter.

Now he is one of the most followed physical activity activists in OSNs, including on Twitter. The same person explained that there are possibly misconceptions hindering activists' goal of increasing participation and awareness regarding healthy lifestyles among youth:

> False information, misconceptions, and myths. A classic myth is 'If you lift weights, you will get shorter.' Others include 'Having a spoonful of vinegar in the morning will help you burn off fat,' 'Having a glass of green tea after eating rice will help you burn off fat.' There are lots of misconceptions that need to be dispelled. It's a big challenge to correct this false information.

He also explained how the behaviour and attitude of people joining his fitness centres started to change as their level of awareness grew.

> I'm happy today that people come to the gym wearing sports clothes. Six years ago, young men used to be shy of wearing sports clothes in public. They would come to the gym wearing tradition Thobe (white gown worn

> traditionally for men in Saudi), go to the lockers and change in sports clothes. After workout, they would do the same thing. They would leave wearing traditional clothes. In 2005, there were 200 gyms all over the Kingdom and today there are over 2,000 gyms. This indicates that people have become more aware of the importance of exercise. Women also have from 30-40 women gyms that opened in Jeddah and Riyadh. This is a powerful move

Another physical activity activist emphasised that institutions must take action towards helping activists grow and continue their work, saying, "We should adopt activists on Twitter and Facebook. I recommend organisations should search for them, train them. They can make what organisations cannot make. Some people told me I did what ministries failed to do in terms of health awareness."

5.6.2 Difference between men and women's activist networks

The study found two types of networks among activists. The first is the open and easy-to-access network for male physical activity activists; the other is a closed network for female physical activity activists. The number of female activists in this study is 10, but as seen in the table in Appendix (O) and found by tracking the timeline for these activists during 2012-2015, almost half of these activists promote their lifestyle which relates to physical activities in most occasions, more than physical activity.

Unlike men's OSNs, women's networks feature such characteristics as secrecy, trustworthiness, and closeness. Because of the country's conservatism, female participation in physical activity could not be investigated properly through articles in the media or by interviews with women. Most women were cautious not to explain their activities in public to avoid attacks from conservative parties still against female participation in physical activity, which, from their perspective, is a domain

that should only be dominated by men. Despite all these restrictions, women created their own social networks, sometimes in secret or closed groups, to spread information and share their activities among those they trust. This socialisation resulted in the need to discover a method to understand women's activities and how they communicate with one another, such as through studying examples of successes in this area by gaining popularity among female networks. To study them, I collected interviews from the media, in addition to following women in their OSNs to best observe the exchange of resources on these social networks and how they spread and increase participation in physical activities. Because many women prefer closed accounts and only accept followers whom they know, it was not easy to follow all of their designated social network accounts. I was referred to the most influential and active women through interviews with youth who already knew them. Some of these active women were my own friends and family, so I was accepted to most of their accounts. Other women were unknown to me, so although these women accepted my invitation for a few months, they later blocked me; this was understandable, because they did not feel comfortable sharing personal information with a stranger.

The main characteristics from men's and women's OSNs are in Table 6 below:

Table 7

Characteristics from men's and women's OSNs

Male OSN characteristics	Female OSN characteristics
• Easy access, open profiles • Men tend to post pictures of themselves participating in physical activity freely • Male activists are more knowledgeable of the information they provide • Men can reply freely to women in public, and sometimes in an informal way • They have female supporters	• Hard access, closed profiles • Women rarely post pictures of themselves participating in physical activity • Few women are knowledgeable of the information they provide, as few are specialised in the field • Women tend to try to avoid replying to strangers and anonymous men, or reply in a

• Most of the stars in these networks know and support each other • The number of physical activity activists is increasing quickly, as many men are interested in becoming famous and are passionate about sports from school, university and postgraduate studies • Highly followed men do not follow many people and prefer following only close friends or family members; the ratio between the number of followers and the people they follow is huge	very formal tone • Very few male supporters; the majority are close family members and friends • The stars in these networks rarely support each other and usually act alone, unless they have friends • The number of physical activities among female activists is few, limited, and restricted due to the lack of support and classes in schools and universities • They ratio between the number of followers and the people they follow is reasonably small

The two first Saudi women to participate in the 2012 London Olympics were the 800 m runner Sarah Attar and the judo athlete Wejdan Shaharkhani. The first Saudi woman to be appointed an official member at the Saudi Equestrian Federation was Arwa Mutabagani, and her daughter, Dalma Malhas, went on to win the bronze at the Singapore Youth Olympics. These influential women were not on Twitter, but on Instagram and Facebook, keeping their accounts more private, for family and friends only. Some might have had alternative screenames because of attacks from the extremist religious sectors who were against their public participation in physical activity. This was a difficult time for them because they were the first Saudi women in their fields, and some religious extremists retaliated against them; for example, Shaharkhani's father filed a lawsuit against those who insulted and swore at his daughter and at her family, but nothing happened because at that time, there were no clear rules and regulations on harassment on OSNs. When similar cases happen today, lawsuits are filed, but punishment is still not clear. This is why female sports pioneers are not encouraged to promote their accomplishments publicly and freely; many

prefer closed networks where they are supported by people they know and protected from any negative reactions or insults.

These realities do not prevent women from promoting physical activity on offline platforms. They welcome promoting physical activities for their peers through offering lectures and friendly talks at different female schools and universities to inspire youth. In Riyadh in February 2014, for example, an artist who goes by Shaweesh drew a street art stencil for Sarah Attar and took a picture of her in front of the art. This picture was distributed in OSNs, and many youth were still proud of what Attar achieved two years ago. The photo was distributed by @CrosswayUK, or The Crossway Foundation, a London-based charity delivering arts and education initiatives for young people across the United Kingdom and the Middle East. This shows that online platforms are not yet ready to welcome women as physical activity activists beyond closed networks of family and friends.

In addition to the names suggested by the participants in this research, the researcher investigated which the online platform had the most followed profiles on Twitter in Saudi Arabia. Many websites offer such services, but the researcher used SocialBakers.com, because it was one of the most popular and was shared among social activists in online social networks. This website pointed out that of the top 50 most-followed profiles in September 2014, sports profiles had a significant share. The most-followed physical activity and sports people on Twitter were the following: in 10th place, Abdulrahman ibn Musaed (2,686809 followers); 11th, Battal Al-Qous (2,565218 followers); 12th, Waleed Al-Farraj (2,428357 followers); 17th, Sami Al-Jabir (2,045063 followers); 24th, Yassir Al-Qahtani (1,425737 followers); 27th, Nawwaf Al-Tumyat (1,346072 followers); 28th, Al-Hilal Football Club (1,324455

followers); 31st, Action YA Dawri (1,245247 followers); and 44th, Nawwaf ibn Faisal (1,075339 followers).

The remaining profiles were religious and cultural, including religious scholar Mohammed Al-Oraifi (9,578177 followers) at the top, followed by liberal and cultural activist Ahmed Al-Shugairi (7,629312 followers), and in third place, another religious scholar, Aid Al-Garni (7,127011 followers). The most-followed people on OSNs based on the interviews were religious leaders, social activists, and comedian social activists. This suggests that regardless of the interests of Twitter subscribers in Saudi Arabia, the majority follow religious people. It is important to mention that religion seems to be the first subject to attract both younger and older generations, even in online social networks, but what puts Al-Oraifi at the top of the list according to his followers is the kind and respectful tone with which he replies to his followers of all ages. Despite this, he was fired from King Saud University in Riyadh, where he had worked as a theologian in the academic community, and left Saudi Arabia in October 2014 due to several crossings of the lines of the law for causing Fitna (an interethnic or intra confessional strife), encouraging youth for Jihad in Syria, and intervening in Egyptian domestic affairs. He remained at the top of the social media list through March 2015, and his news was not published in any local news agency, only the Arabic news agency outside Saudi and on Twitter. Although religion is respected and practiced by the majority of the citizens in the country, youth still fear and do not accept the extreme religious men who sometimes insult them on the street if they do not attend mosque or adhere to prayer times; they also ask women to cover their faces while walking or shopping outside their houses. This violent tone turns youth away from religion and from people. However, Al-Oraifi knew how to communicate with youth and gained their trust in OSNs, and instead of running away from him, they

endorsed and followed him. His success was rooted in how he delivered his messages and shared his personal information and religious beliefs in a welcoming tone. Youth, particularly in OSNs, tend to be attracted to less serious tones, so they usually reject those who deliver messages harshly. As further evidence, the second most-followed social activist was Al-Shugairi, a young, moderate religious leader who did not order youth to do things. Instead, he shared his own experiences to inspire youth, and they followed and hashtagged him back. This type of scenario happened with physical activity activists who posted their own activities, which youth followed, and then shared their own experiences by hash-tagging the person who inspired and motivated them.

According to several participants, using religion moderately is successful, in addition to emotional fear, because people in the Saudi culture tend to be too emotional and fear over their health plays a very alarming role in encouraging them to act immediately toward their health and fitness, in addition to the reward they would feel with religion, this balances it and keeps them going.

At first, it seemed like studying offline platforms and interviewing people face-to-face delivered the information to answer my research question; however, observing the same people on online platforms, along with popular physical activity activists, gave additional insights. Both online and offline platforms are similar in some ways, but different as a whole. To begin with, offline platform decision makers in the field of physical activity are official government organisations such as the GAS and the MOE, but in the online platforms, people who promote physical activity have the highest number of followers, and most do not represent government organisations; they just represent themselves and their hobby or interest. Users tend to follow people who are like them and are posting for health benefits instead of financial or marketing

purposes. One participant said, “some came from a similar cultural background and shared with us how they got into taking care of themselves, so it motivated me to do the same.” Second, digital ethnography showed that online physical activity activists gained their followers’ trust by interacting, replying and engaging their fans with up-to-date information. Third, youth seem to prefer the relatively small age gap between them and the most popular physical activity activists; the most influential activists in physical activity participation range in age from of 25-45. Fourth, all the sports activity activists come from the Western region as well as their followers who support them and attend their physical activity events. However, youth and older generations from the Eastern and Middle regions show great interest in the same followed physical activity activists, but perhaps due to location they prefer to join fitness centres or gyms instead. The nature of the Middle and Eastern regions in Saudi Arabia differ from those of the West regarding openness, which connects with the prevalence of sharing personal daily information such as gym visits and daily walks. While Western youth felt comfortable sharing such information, youth from other regions did not, unless it was with close friends and through applications like Instagram or WhatsApp, which, as suggested by comments in the online survey, feel more private.

It is important to note that not all athletes and decision makers promote physical activity in OSNs. Many famous male Saudi athletes and decision makers from Saudi Arabia are missing from the table above, despite their high number of fans. This is because they were not mentioned as physical activity promoters or influencers in online social networks during the youth interviews or online survey. In addition, because digital ethnography shows that many of these decision makers tend not to reply to all comments, and on most occasions do not promote physical activity, they tend to tweet or retweet sports achievements or support religious and social

causes. The loyalty towards the tribe or tribal factor and belonging to the same tribe plays a significant role in getting supporters and followers in online social networks; physical activity activists mentioned during the interviews that while going through a celebrity's followers, many had the same tribe last name. The table at the end of this section includes only those individuals identified as motivators or influencers during this study's interviews and online survey.

One of the young female participants acknowledged that she enjoys following her family members in OSNs because she is unfamiliar with the other pro-athletes: "I follow my friends. I also follow Consultant Muhammad Al-Dehaim, who I took a course with. I don't follow any sports athletes. Maybe my uncle, he is a rally driver. I follow him because he's my uncle."

However, few athletes who support cultural development or athletics seemed to be appreciated and followed online. Saudi rally driver Yazeed Al-Rajhi, for example, was described as a motivator because he provides information about health and safety and technical driving tips, and he replies to fans who inquire about these issues through various accounts; he also launches awards to promote physical activity and sports in the Saudi community. Other athletes were followed because they are part of charity and volunteering institutions, which are considered noble in the Saudi religious society. Altruism seems to enhance the image of athletes in the country and raises their value within the culture and among parents who usually discourage their children from athletics, arguing that sportsmen are losers and illiterate who have no future after their career ends. This is unsurprising, because parents are expected to promote what they perceive as a better future for their children. In addition, men with high profiles and decision makers in the field of physical activity are either too busy

to communicate with youth in OSNs, or prefer offline platforms to promote services and facilities.

Table 7 shows the most followed physical activity activists in Saudi Arabia, and the number of followers and where they come from as of March 1st, 2016 (the names provided are based on the research participants suggestions and followers):

Table 8

Most followed physical activity activists in Saudi Arabia

No.	Female physical activity activists	Tweets	Following	Followers	Location	Bio
1	Farah Al-Zahrani (@farahalzahrani_)	10.8K	136	339	USA	Saudi Jujitsu athlete
2	Fatima Batook (@fatimabatook)	17.5K	1,117	2,958	KSA	Fitness & spinning pro
3	Waad Arif (@WaadArif)	28.1k	918	2,210	Riyadh, KSA	Fitness trainer, TV broadcasting student
4	Nouf Alosaimi (@NSharky)	3,124	546	350	Jeddah, KSA	Scuba diving instructor
5	Hana Alalwani (@hana_alalwani)	50.2K	1,481	79.7K	Jeddah, KSA	Sport columnist, reporter, broadcast
6	Dalal AlDossary (@dalalnaldossary)	1,665	427	800	KSA	CRS consultant in sport
7	Rawan Zahran (@RawanFZ)	2,817	379	1,264	Jeddah, KSA	Fitness trainer,
8	Raha Moharrak (@RahaMoharrak)	708	35	1,340	Jeddah, KSA	1st Saudi to climb mountains
9	Dania Al Maeena (@DalMaeena)	3,973	581	1,240	Riyadh, KSA	Captain of Riyadh United basketball team
10	Sarah Attar (@thesarahattar)	926	791	1,391	USA	1st Saudi runner in Olympics 2012

No.	Male physical activity activists	Tweets	Following	Followers	Location	Bio
1	Dr Rayan Karkadan (@Rayankarkadan)	58.6K	1,684	91.7K	Jeddah, KSA	Doctor & creator of Mizan and sports awareness, and challenge 22 in Twitter
2	Ali Sheneamer (@sheneamer)	53.7K	781	23.6K	Jeddah, KSA	Works at Bupa
3	Battal Algoos (@battalalgoos)	22.8K	974	4.29M	UAE	Sport TV presenter

4	Mohammed Bakri (@MGBakri)	56.6K	1,867	8,897	Jeddah, KSA	Creator of Qomami hashtag in Twitter and design thinker facilitator
5	Dr Salih Alansari (@SalihAlansari)	59.1K	159	84.2K	Riyadh, KSA	Family doctor and creator of health and walking hashtags in Twitter
6	Hadi Souan (@hadi400h)	2,662	122	4,467	Jeddah, KSA	Olympic athlete medallist in Sydney 2000 hurdler
7	Dr Bader Alshibani (@jebadr)	4,960	356	27.7K	Jeddah, KSA	Fitness expert and owner of gyms in Saudi
8	Prince Nawwaf ibn Faisal (@nawafbinfaisal)	3,529	479	1.39M	Riyadh, KSA	GAS former president
9	Dr Obai Albashir (@obaialbashir)	43.1K	844	85.1K	Jeddah, KSA	Consultant in health and founder of Mizan and health and fitness hashtags in Twitter
10	Yazeed Alrajhi (@yazeed_alrajhi)	21.7K	226	294K	Riyadh, KSA	Saudi rally driver and businessman

5.6.3 Exchange of resources (Twitter's Hashtags)

The study depicted how youth are no longer interested in the traditional methods to promote physical activity, and the physical activity activists also explained that one of the reasons they have become very popular and followed is because they offer two-way communication. "If you give a brochure or put it on my car's windshield, I won't read it. There should be two-way communication. This is how it works now; first by listening to them. Second, by adopting a two-way communication process," said one of the physical activity activists.

Massive data was delivered from the analysis of the 100 Twitter hashtags related to physical activity in Saudi from the period 2012-2015. The 100 hashtags data collection delivered several interesting results (see Appendix L):

1. Despite the hashtags being in Arabic (meaning they could be used by other Arabic users from different Arabic countries), Saudis started 93% of them. The Middle Province led with 34%, the Western Province followed with 24%, and third was the Eastern Province with 4%. However, there is a percentage of Twitter accounts that do not display the location of the city and only display the country. Hence the results may vary when it comes to the provinces' interest in creating hashtags related to physical activity alone. However, the Middle Province likely leads due to the fact that the capital Riyadh is located there, and most of the ministries' and institutions' headquarters are based there too. Female physical activity hashtags tend to be generated from the Western Province more than any other location such as Saudi super league in London scandal, Yoga Jeddah, #**jeddahunited #women,** Women entering stadiums. If it supports women in physical activity it seems it is generated from the Western region, while if it's to ban or prohibit it comes from the Middle Province (Sarah Attar - Wijdan Shaharkhani, A female in Aljohra stadium, and Women Clubs).

2. The majority of the hashtags (34%) started in 2012 and are still active (if they are not time related to an event). Then 23% were launched in 2013, 19% in 2014, 16% in 2015, 6% in 2011, and finally 2 in 2010.

3. A major lack of support exists for women in Saudi with regard to physical activity.

4. Institutions are very active now and tend to promote their physical activity related activities through Twitter, as this OSN is still very popular among Saudi youth and older youth, though they may not have as many followers as the physical activity activists in this research.

5. Many of the hashtags were created by physical activity fans and football fans in particular.

6. The physical activity activists who participated in my research delivered very important hashtags to increase physical activity awareness among youth in Saudi and became almost like a celebrity. People tend to take photos with activists whenever they find them outdoors. They are becoming role models and a credible source for physical activity information.

7. Male physical activity activists online support each other online, while female activists provide support only within their closed groups and do not tend to use hashtags as often as the men do (for example, the Jeddah United team tends to write about their activities without hash-tagging; I searched for them through their account).

8. There are many physical activities and sports related hashtags, but these hashtags were rarely targeting physical activity in general, so they were not included (e.g., hashtags on football clubs talking about their club achievements and scores; cycling groups talking about each city or province in Saudi Arabia; non-profit physical activity tournaments happening in the holy month of Ramadan for charity reasons in various sports such as football and basketball).

9. Twitter, in particular, does not seem to promote close offline networks. Instead, it tends to dilute such networks because an account can be created by anybody, is targeted to everybody, and the initiator stays anonymous.

10. Women who are more into physical activity promotion or sharing their physical activity on social media tend to use hashtags in English such as the Rawan Zahran & Jeddah United team accounts. According to some of the participants, those who know English are more open minded

and usually support them and do not attack their lifestyle, which is considered quite liberal in Saudi Arabia. These women often prefer to use English themselves for several reasons. They may have lived or travelled abroad or been educated in English-speaking schools, or they may have a foreign parent, or simply want to follow the trend of the modern life style that promotes speaking English amongst youth.

11. The main exchange of resources have targeted football, physical activity and health; supporting women/banning women from physical activity participation; physical activity and religion; and sports racism. It is usually delivered as information and this information varies in quality and in kind (some were about facilities and other generating support or about racism). The highest percentage was for football related topics with 22%, physical activity and women 14%, physical activity health and fitness 12%, walking 7%, cycling 7%, physical activity facilities 7%, extreme sports 7%, physical activity media 6%, physical activity racism 5%, Olympics 4%, doping 3%, physical activity schools 2%, marathon 2%, special needs 1% and diving 1%.

12. The criteria of emotional fear was present as suggested by some of the physical activity activists who tended to use it to influence participation through several hashtags related to health and fitness, but not directly through the hashtag name except in three cases: the first meant ‘scale for health’, the second meant ‘junk food’ and the third meant ‘wake up for diabetes’. In these three hashtags, the emotional fear was directed towards enhancing one’s health physically and through healthy eating to enjoy a better lifestyle, while in others emotional fear was linked to religion to disallow women to participate by relating it to being punished from God’s mercy and excluded from his reward.

13. The reports of time preferences showed that 63% of the participants preferred PM times for workouts, with the highest percentage at 6 to 9 PM with 26%. The remaining 37% preferred the AM time, specifically the hours between 9 to 12 AM with 13%.

14. There is high interactivity between male youth, as physical activity and sport is still a male dominated field. This investigation showed that 67% of the hashtags were launched by men, 17% by women and 16% by institutions (e.g., media outlets or ministries).

It would be interesting to find softwares that would analyse the Arabic tweets in each of the previous hashtags to deliver an enhanced analysis of the nature of communication. At the time of the study, the tools available could only do the analysis for the past month to the past year, and they were mainly focused on the English language. This was a barrier in this research and for other researches in the field of social networks using Arabic as their mainstream language. Though there are many easy-to-use and free tools for English tweets, the only way to transfer the Arabic tweets for four years was to save them in a PDF format, and this sometimes would reach 500 MB for one hashtag (I had to consider laptop/desktop space). However when uploaded to softwares such as NVivo, the Arabic words were divided into meaningless words and letters or moved to read in the opposite direction (Arabic is written from right to left, unlike English). This made it hard to analyse and to maintain consistency in the analysis for all 100 hashtags. In addition, though a website named Topsy would have allowed me to learn the number of tweets for each hashtag, in 2014 Google bought the website and shut it down. Now the alternatives are mainly costly business-based options.

When searching for the first tweets for a hashtag, there was also a possibility that the same topic had been discussed previously but without hashtags. The interest in hash-tagging boomed in 2012 for individuals interested in the field and for institutions too. Though some of the hashtags were launched outside Saudi Arabia, such as in RZH and Mizan (scale), physical activity online activists used hashtags heavily.

5.6.4 Increase awareness on physical activity and sports

Attempts to increase awareness among youth to participate in physical activity are shown through the large numbers of followers and comments in the physical activity and health fitness related

hashtags. During the interviews with the youth participants, they all confirmed they enjoy communicating in the OSNs and following physical activity activists from Saudi Arabia and from outside Saudi Arabia, except for two women who were younger (15 years old). These two young women did not realise a lot of the physical activity activists were online. The rest of the participants confirmed that they enjoy following these activists because of the information the activists provide based on their background. The participants feel certain that they are receiving correct information, and they feel that the activists could be easily approached. "I like to follow Karkadan because he is one of my city's men and I know he is a real person who shares similar lifestyle and is very up to date and replies to our comments or questions. He is a great role model for youth," said one of the male participants.

The hashtags also showed that among the exchange of resources to promote participation in physical activity, several hashtags spoke about increasing awareness in the field through relating it to physical activity, PE and the Olympics. However, though these hashtags were created to prompt positive comments, they also included lengthy negative comments from youth and older youth over 25 who believed that sports are still way behind in Saudi and that there is no hope for the country in competitions. For example, some of the tweets in the hashtag related to 'what have I learned from the Olympics?'. This hashtag appeared during the 2012 London Olympics. Some related it to the downgrade of Islamic hijab, as the traditional way of wearing the hijab was presented differently to meet the regulations of the NOC. As one female commenter pointed out, "There is a tremendous development in the Islamic Hijab, from Niqab to litam to Imamah and finally hat." Another commenter went on to blame the governmental institutions: "The GPWY is only buildings, budgets, people getting salaries and far away from victories." One more pointed out the lack of awareness and said, "the Arabic culture in Olympics is way behind, and we still need a lot to reach the Olympics." Another one expressed humiliation over the Saudi participation: "I learned that Saudi women must only stay at home, that her place to cook." Another participant extended sarcastic comments on the

Saudi teams, which are referred to sometimes as the Saudi falcons: “I learned that the Olympic falcon is tied and his feathers are plucked.” An example for the role of fathers also appeared when one commenter mentioned, “I learned and taught my daughter to be careful and see how foreigners force us to get involve to affect you to remove your Hijab until it became a hat.” “I learned that Arabs’ main focus is only participating and not competing,” said another male pointing out the lack of awareness with regard to participating in such major events. Despite the negativity, many other hashtags were created to promote physical activity. These hashtags are discussed further in the following section.

5.6.5 Walking, cycling and diving networks for physical activity

Physical activity activists took it to another level in Saudi Arabia when they succeeded in launching hashtags to promote physical activity across the country in various activities depending on the weather, geographical location and other natural resources. For example, they encouraged the creation of groups to promote walking, cycling and diving. Their efforts helped in exchanging not only information, but also directions for each other towards the appropriate venues based on their location. Activists become easy to access and are also easily approachable for any additional information. This is something very beneficial for youth, because they could easily follow activists, inquire, learn from their experiences and also join them.

Two physical activities were investigated in this section due to their popularity among youth in Saudi Arabia, and due to their large number of followers in OSNs. These two are walking and cycling. Both have attracted and motivated people to get involved when groups made it official in OSNs and started to promote their activities and share their news.

Walking perhaps is one of the easiest and most practiced activities, especially as Muslims tend to go to pray at the mosque daily and believe by walking for a good cause like praying they gain good deeds. Dr Salih Alansari promoted walking through his book and talks and workshops, but when he took it to the online platform, he opened up to a wider scale of fans. These new fans welcomed such activity and encouraged him to continue to offer more knowledge and walking routines. After he

joined Twitter, he met with other youth who shared the same interest and started organising walking times to meet. While posting such activities online, more and more people became attracted and walking started to take place sometimes by the seaside and sometimes by the mountains, where youth could also hike and camp. Since 2011, Alansari has succeeded in attracting more than 64,000 followers. And because religion is highly influential in Saudi Arabia, his approach was to advocate people and remind them that becoming healthy and physically fit and strong is part of being a good and strong Muslim, as Muslims are advised to be in the Holy book of the Quran and via the prophet Mohammed (peace be upon him). This approach by a religious person attracted many religious followers who may otherwise have not followed an activist. The pictures of the followers include individuals who have grown long beards (usually long beards are for more religious people), and their replies are most common when a post includes wishes and prayers or verses from the Qura'an. And sometimes religious fake names for those who want to show they are religious despite their real identity.

During his journey to promote the walking culture and increase awareness on its benefits, Alansari met with two youths who also came from a medical background, namely Rayyan Karkadan and Obai Abashir. Hiking as a hobby attracted many, including the previously mentioned, over the past ten years in Saudi Arabia, especially in the Western region. The fan base motivated them to keep on walking and to encourage others to join.

Cycling in addition emerged in a very interesting way through OSNs, and groups of cyclists from different cities started to cycle from Jeddah in the Western region in March 2012 to Riyadh in the Middle region. The movement mushroomed in a very short period of time, attracting many followers to join and to share each other's activities and photos. These cycling groups include local youth and older generations, and the groups welcome foreigners who share the same interest and want to enjoy rides in the country. Within less than a year, the Saudi Cycling Federation (SCF) started supporting these groups and helped them organise a marathon across the country in addition to other

governmental organisations such as the Jeddah Municipality. Though the SCF has less than 1,500 followers on Twitter, the Jeddah cyclists group, which started with three cyclists and from there increased to nine before deciding to make it official, in no time attracted more than 8,000 followers and adopted the motto "change your life." The SCF made it very simple: all they asked for was that participants be over the age of 16, have a bike and be willing to follow the safety road rules and regulations. On September 18, 2014 the municipality, with the support of the Saudi Investment Bank, inaugurated the first four cycling stations in Jeddah. The first one was established by the seaside so the public could match the demands of the cycling fans and encourage more people to use it (similar to Barclays bicycle stations in London). The same cycling stations will also be implemented in King Faisal University in Al-Ahsaa to motivate youth and tutors to use it in the Eastern Province. After this popularity, the new account for all Saudi cycling fans @my_bicycle_sa has 17000 thousand followers. It is noteworthy that several cycling groups in Saudi Arabia, including Jeddah cyclists, were among the first to retweet the online surveys for this research when it was first launched online and were happy to cooperate when needed.

Less than ten years ago in 2007, I had conducted an interview with Saudi national team cyclist Fathi Al-Muslim for the Arab News newspaper. At that time, he said it was hard for him to train outdoors because the community in the Eastern province was not yet used to seeing athletes and cyclists training. He said people made fun of him on many occasions, so he had to train in dangerous places sometimes to prevent himself from being bullied. However, his PE student used to show up sometimes to support him and to join him. Now, thanks to OSNs and the changing lifestyle of youth, cycling has become the new trend and lifestyle for youth and athletes who want to be able to train freely anywhere and with respect.

5.7 Conclusion

This chapter concluded the findings of the study based on the research objective, which included understanding the exchange of resources between youth and the decision makers who

facilitate and influence participation in physical activity in Saudi Arabia. The main results showed the primary role of parents and family members, followed by friends, governmental and private institutions, religion and physical activity activists in OSNs. Youth tend to exchange resources with their primary influencers (parents), who tend to support their children emotionally, financially and through taking them to physical activity venues where they can participate. However, parents do not participate in the online platforms; thus parents' time of influence is limited. The role of friends seems to be richer, as they offer emotional support and introduce each other to known venues for men and unknown venues for women via offline platforms during the daytime at school and later on through OSNs during the rest of the day. The study also revealed lack of cooperation between the public and private institutions, but it did show the recent interest of both in utilising OSNs to promote their activities regardless of whether the activities are physical or not.

The data collected also shows that the influence of the agency in the offline platform among youth is stronger as they prefer to show their own strength and relate their success to themselves especially among their peers or in front of their parents, and this makes influence of the structure appear less, even if it was not true. Yet, in the online platform where individuals seems to have different types of personalities and choose what to show to the public, they tend to show their self-motivation less, and show that they are encouraged and influenced by other PA activists in online social networks.

Finally, as it may seem in the bigger picture, youth interviews showed that having a role model or not having one in their close network plays a key role in their participation. Accordingly, their parents blame the institutions such as schools and GAS for that lack of support, and the institutions tend to blame each other and the family for not motivating children to participate in physical activity and to sustain their participation for a better and healthy lifestyle. This failure to acknowledge responsibilities and duties tends to leave the dilemma unresolved, at the will of culture, tradition and religion, especially when it comes to women.

Chapter Six: Analysis and Discussion

6.1 Introduction

This chapter critically analyses the overall findings of this study in light of the previous studies in the field. The chapter also discusses the benefits of this research and the contribution of knowledge, and how the outcome can be used to enhance the understanding of the exchange of resources between the agent and his or her structure in Saudi youth networks. Finally, the chapter explains the limitations and suggestions for further studies.

6.2 Analysis and discussion

This study aimed to understand the key factors affecting youth physical activity participation in Saudi Arabia. The area of interest is still novel and hence there are few studies looking at this particular area. I chose to study youths aged 15 to 24 years because at 60 per cent they make up the highest percentage of Saudi Arabia's population. Many people in this demographic are suffering from health risks including diabetes and obesity, especially women, and the percentage is increasing (WHO, 2015). In addition, a recent study conducted by Moradi-Lakeh, El Bcheraoui, Tuffaha, Daoud, Al Saeedi, Basulaiman and Mokdad (2016) on a sample of 2,382 youths aged 15 to 24 years old concluded that the prevalence of none or insufficient physical activity was 41.8 per cent in men and 75.6 per cent in women. Mean BMI and prevalence of insufficient physical activity, current smoking, and hypertension was higher in 20- to 24-year-olds than in younger groups (Moradi-Lakeh et al., 2016).

Up until now, studies conducted on Saudi Arabian youth and their participation in physical activity investigated the role of family, schools or other providing facilities separately and only with adolescents and children. Western literature, however, dedicated great efforts to understand how various structures (e.g., family, school, environment) influence youth to participate in physical activity. This encouraged me to investigate the role of all the Saudi decision makers in facilitating

physical activity participation in Saudi Arabia through the social network structural theory adopted by Stokowski (1997), which helps explain the relationship between agent and structure by focusing on the exchange of resources (e.g., emotional support, financial, information, facilities and services) (Giddens 1979, 1984). Giddens explained, "Rules and practices only exist in conjunction with one another." In the same way, resources too are inextricably linked to practice. Giddens (1984) observed some forms of allocative resources (e.g. land, raw materials, etc.) and suggested that it may seem to have a real existence. In the sense of having a time-space presence, this is obviously the case. But their materiality does not affect the fact that such phenomena become resources...only when incorporated within processes of structuration (p.33).

This youth group, both men and women, make up the highest percentage of online social network users. According to previous studies, they spend most of their time on these OSNs. Therefore, it was important to include OSNs, which are an extension for the offline platform and where youth continue to communicate with all the moderators who influence their behaviour and motivate them to participate in physical activity. This information led to my research question: How do OSNs facilitate Saudi youth participation in physical activity?

The study reveals that social networks affect Saudi youth decisions to participate in physical activity depending on the type of exchange of resources between youths and their decision makers, how close these decision makers are to the youths, and what decision makers offer. This is confirmed by Giddens (1979, 1984) who proposed the notion of structure (or structural properties of social systems) as the set of enacted rules and resources that mediate social action through three dimensions or modalities: facilities, norms, and interpretive schemes. This study also showed that social networks, both offline and online are very influential, yet in terms of time, youth are more exposed to the online platform, enjoying a two-way sustainable communication which allows them to speak their mind about physical activity participation without any barriers between sexes. This open communication helps them get answers from specialists.

The study showed findings congruent with previous literature (Eyler et al., 1999; Sallis, Hovell & Hofstetter, 1992; Sternfeld, Ainsworth & Quesenberry, 1999; Kahn et al., 2002; Macdonald-Wallis, Jago & Sterne, 2012), confirming that family, school and friends influence participation among youth. The findings showed that the more educated, open-minded and physically active the parents, the more chances their children will grow up to be the same.

Due to the cultural, traditional and religious nature of the country, the findings also show the important role of cousins' support for both men and women. In Saudi society, families prefer their children to spend quality time with their peers and children who were brought up in similar atmosphere and tradition. This means they spend a significant amount of time with their extended families. In addition, the study delivered new findings with regards to the role of religion and the misinterpretations of Islam by some extreme religious families. On one hand, families encourage participation in physical activities for their sons, and on the other hand, they discourage participation for their daughters. Moreover, the study showed that decision makers in the governmental and private sectors could be influential in their institutions when they are up to date with technology and online social networks, welcoming it, adopting it and using it to enhance communication and exchange resources with youths. For example, the former president of GAS Prince Nawaf ibn Faisal encouraged his employees to have active accounts on OSNs to communicate with the youth demographic. The prince's adaptation of technology and physical activity participation activists to communicate also confirms Giddens' argument (1993) that users have the option, at any moment and within existing conditions and materials, to "choose to do otherwise" . With the technology at hand and in such possibilities to do otherwise lies the potential for innovation, learning and change. Their initiative was welcomed and became one of the most followed accounts in Saudi after religious and social activist accounts on OSNs. The study also showed that the lack of facilities and services is one of the main factors for inactivity among Saudi youth, not to mention social status because the governmental sports

venues are not for everyone. Private fitness/health centres are also limited to those who can afford to pay for it. There are also transportation obstacles.

Before the 1980s, the majority of leisure theorists ignored the fact that women's experiences might be different from men's, or that they garnered additional study in their own right (Speer, 1999). This study confirmed that, for various reasons, Saudi women do not have as many opportunities as their male peers with regard to participating in physical activity. However, it is important to mention that a rising number of women were encouraged by their family and supported emotionally and financially to freely participate in physical activity in Saudi and abroad. Yet, when comparing men's and women's OSNs and related online activities, such as use of Twitter, there are huge differences in the number of topics discussed related to physical activity and in activities allowed between men and women. The study showed that the exchange of resources was mainly positive about information on venues and health and fitness advice, yet there were a lot of negative exchanges of information about women and physical activity in Saudi. When it came to the investigation of the central player in men's and women's OSNs, the centrality feature was visible because of the number of followers of the highest influential accounts, and the interactivity in the hashtags they inaugurated of which some date back to 2011/2012 and are still active to the present day. Being central according to the findings, made them stars of the network and role models too.

According to the study, women are still attacked by religious extremists and thus they participate in physical activity in secrecy and only with close family members or friends, or friends of friends. There are initiatives to enhance participation in physical activity among women through fitness centres, but accessing it is still limited to a certain social status who can afford both the membership costs and the transportation costs. However, when compared to five years ago, Saudi women have taken a huge step forward in physical activity participation thanks to the first Saudi female equestrian and other role models who participated in the Singapore Youth Olympics Dalma Malhas and in the 2012 London Olympics. Wejdan Shaharkhani participated in the Judo event, and

Sarah Attar in the 800-metre heats. Because these women were granted permission from the government, this consequently encouraged other women to work harder in the field and no longer fear being condemned in the media. Several decision makers in this study discussed having a role model in physical participation, and the investigation showed that the youth themselves also found it to be very important and influential. While men look up to pro footballers, for examples, Saudi women now look up to female athletes and enjoy listening to their experiences and following their coverage in the news and in OSNs. They are motivated to follow a healthy lifestyle and play sports too. For feminist theorists, claims about leisure cannot be based exclusively on the white, male experience; they vary according to gender and a multitude of other variables (Henderson et al., 1996). The study's findings gave insight into the role of upbringing (education level, social status and religiosity of parents) in encouraging or discouraging female participation.

Many texts on the subject of leisure noted that it is a notoriously difficult concept to define (Esteve, San Martin & Lopez, 1999; Haywood et al., 1995; Stokowski, 1994). Stokowski (1994) touched on this issue of individual and contextual variation in her assertion that common sense perceptions "fail to capture the social character and significance of leisure behaviour." According to Stokowski (1994), leisure cannot be located solely or exclusively in the feelings and experiences of the individual. Rather, missing from our understanding of leisure is knowledge about how people construct leisure behaviours and meanings within the social contexts of their daily lives, how behaviours and meanings are socially structured and organised, and how the extended social structures of leisure subsequently exert influence on individual choices and experiences. Accordingly, for Stokowski (1994), leisure is both socially constructed and structurally constrained; this includes both young men and women of course, and this was confirmed by this study's findings as a crucial factor of female inactivity in Saudi Arabia.

In addition, the Fourth Estate, also known as the media (e.g., press, radio, television and other mass media) was always considered as an influential tool and the voice of the unheard since the 18th

century, even in the area of physical activity and sports. With the transformation of the media from the offline platform to the online platform of OSNs, online social media became the Fifth Estate (Dutton, 2009). Dutton (2005) explained how the Fifth Estate was established and why this could challenge the influence of other more established bases of institutional authority since the Internet and related information and communication technologies can play a central role in "reconfiguring access" to people, information, services and other resources. This study confirmed this through the rapid and massive development in the field of sports media and how they are all present in OSNs through their institutions' official accounts, their own personal accounts, and this rising importance is validated by the number of followers they have. According to an interview with a leading sports newspaper in Saudi, they had to join because everyone was doing it and it was for the good of the newspaper to be able to communicate with more people. Even sport journalists now are encouraged to join social networks and promote their work. Further, they are using it to write about sport topics and ask youth about their opinions on various sports, especially football.

Peer influence, for example, continues to have the same effect in OSNs (Lewis, Gonzalez & Kaufman, 2012). Lewis et al., claimed that students, who share certain tastes in music and in movies, but not in books, are significantly likely to befriend one another on Facebook. In addition, a systematic review on the influence of SNS on health behaviour change showed a positive effect of SNS interventions on health behaviour outcomes (Laranjo, Arguel, Neves, Gallagher, Kaplan, Mortimer & Lau, 2015). This study confirmed that too through the interviews with youth and observing their access and interactions on OSNs, including the physical activity proponents they followed. Youth interest in technology and computer-assisted communication is increasing based on the findings of this study in addition to their interest in being up to date with new OSN sites and applications in the field of physical activity and sports or just socially.

This study also shows that the youth demographic tends to join OSNs to communicate with each other and share information they like and enjoy talking about. There has been an increase in the

number of youth who are joining OSNs, as well as the decision makers who are using it to promote physical activity participation. The study also revealed the role of significant others in encouraging physical activity participation among youth; however, due to the cultural and religious nature of the country which does not encourage such relationships, this topic was not shared intensively online but was touched upon in the face-to-face interviews and in the survey.

This study is the first in Saudi Arabia and the Arab region to investigate the relationship and exchange of resources through offline and online social networks between youth and institutions facilitating physical activity participation. Therefore, this study may be used by decision makers who facilitate physical activity participation among youth in the country to help better understand the role of institutions in the youth structure/network, and accordingly look for ways to develop it based on the findings. The study will also help and encourage these institutions to enhance their communication with each other and with youth through the OSNs, which have a high influence on the population and may eventually increase the percentage of physical activity participation. Because this age group has not been studied before in Saudi, this study offers insight into their way of thinking with regards to physical activities participation preferences (e.g., time, location, and type). This information may help the facilitators create suitable opportunities. Furthermore, OSNs are still a platform hosting and encouraging high interactivities between youth and physical activity participation activists. This will help private and public institutions learn from the OSNs activists' experiences, support them, and ensure the appropriate exchange of resources reaches youth through them, or through other representatives from the private and governmental sector. The study also highlighted the important role of families. Increasing awareness among families and parents in particular is encouraged because they are the first moderators and hold authority over their children's activities indoors and outdoors. This is especially true for women because, in accordance with Islamic Sharia law, they remain under their father's or older brother's guardianship until they are married, at which point the husband becomes their male guardian.

However, and again because it was the first in the area and with this age group for youth (15-25 years old) it was hard to gather information face-to-face from them from the 13 different provinces. Hence, the qualitative data focused on the Western province only. Further studies from different provinces are encouraged since they are religiously, culturally, and traditionally different and the role of the structure may vary accordingly. Due to the fact that social network analysis software does not support the Arabic language, this limits the analysis of the data to a certain extent. However, if there was software to download the data and analyse it in Arabic, it would be interesting to follow the hashtags suggested in the study. For example, create new ones to promote physical activity participation among youth in a lengthy investigation and highlight the key factors and topics in creating interactivity between the agent and the structure further in a longitudinal study. Religion and physical activity participation for men and women in Islamic countries such as Saudi Arabia is an interesting field to investigate further, especially the role of the religious police in offline and online social networks. This will enable facilitators in the field to address the obstacles producing inactivity among women in the country; women make up the majority of the youth percentage in the country and face more health risks.

Moreover, findings revealed that all women participating in physical activity in this study tended to prefer using the English language to promote and communicate, unlike men. Clearly Western culture has an influence on Saudi womens' participation in physical activity and this bears further investigation.

6.3 Conclusion

Saudi youths make up a large number of the population and helping them enjoy a healthy and active lifestyle will produce a healthier and more active society. The situation is promising though it is moving forwards in baby steps. As physical activity researchers, it is our responsibility to investigate, understand, and reveal youth concerns and lifestyles for both sexes. Physical activity participation facilitators need to address these concerns through a sustained interactive exchange of resources with

youth. Communication between the agent and his or her structure must be continuous and will only be continuous if institutions earn the youth demographics' trust, listen to their needs and meet it through the exchange of resources including emotional, financial, information, venues and facilities. OSNs are the gate for our youth's active future and they must be utilised and adopted by all institutions. Finally, female and male youths in Saudi are in need of physically active role models from both genders.

Chapter Seven: Conclusion

7.1 Introduction

The present study was designed to explore and investigate the relationship between agency and structure in the field of increasing youth participation in physical activity in Saudi Arabia and the role of online social networks (OSNs) in that process. The study was also designed to examine how youth exchange resources within their structures and how they participate through the theoretical framework of social network structural theory, as introduced by Degenne and Forse (1994) and developed in the field of leisure by Stokowski (1994), and finally implemented in the field of OSNs through researchers such as Garton, Haythornthwaite and Wellman (1997) and Dunbar, Arnaboldi, Conti, and Passarella (2015).

The research objectives were aimed at understanding the exchange of resources between the agent and the structure, as this exchange influences youth to participate in physical activity. The study also examined to what extent social networks, both off and online, shape young people's participation in physical activity. Youth communication strategies, and whether these strategies include communicating and promoting physical activity participation through OSNs, were examined as well. Additional objectives included an attempt to understand to what extent decision makers are up to date with technology by providing them with similar questions on the use of technology and OSNs; whether key structural entities use technology to promote participation in physical activity or only for entertainment; and whether the various structures surrounding youth communicate and how they promote participation in physical activity.

7.2 Empirical findings

The main empirical findings of the study were summarised in the findings chapter and were integrated based on the role of each of the moderators in youth structures, which shows the influence of social network participation in offline and online platforms.

- How do online social networks facilitate physical activity participation among Saudi youth?

a. Family and parents: The majority of the participants in both platforms agreed their parents played a role in encouraging or discouraging their participation through offline social networking and face-to-face motivation, and the encouragement varied based on the parents' level of education, social status and level of participation in physical activity. Yet, while family members such as siblings and cousins were active in OSNs, parents were not and did not play a role in encouraging their children through OSNs. In the few cases where youth said their parents were active in OSNs, such activity was only to follow up on their children's activities and get connected to their friends and family who were present in OSNs.

b. Friends: The majority of the participants indicated that they spent most of their time communicating with their friends either in school (offline social networks), or after school (through OSNs) and enjoyed participating with them in physical activity more than any other moderator.

c. Religion: The study also showed that religion played a crucial role in encouraging men to participate in physical activity and in discouraging women from participating due to various misinterpretations of Islamic teachings and explanations in the country.

d. Public and private institutions: The study showed that both types of institutions welcomed the use of OSNs to communicate with youth to promote physical activity, yet the greater effort was given through private institutions' accounts in OSNs.

e. Online physical activity activists: The study revealed OSNs were a hub for many activists, including physical activity activists who wanted to reach youth and encourage participation in physical activity through websites such as Twitter. The study also showed this category to be leading in providing role models of both genders who can be easily reached and followed for up-to-date information on physical activity participation. The study showed that despite the low number of these role models, they are connected and support each other to benefit all. Male users of OSNs seem to be stronger and more connected in contrast to female users, who prefer closed networks to enjoy more

privacy and to prevent themselves from being attacked from extreme religious adherents and the religious police in the country.

f. Lack of support for women: The study showed discrimination regarding opportunities available for women to participate in physical activity, in addition to a lack of support from governmental institutions and limited support from the private institutions in three to five out of the 13 Saudi provinces.

7.3 Theoretical implications

The theoretical case of the role of social network structure theory ascertained the role of the structure in encouraging youth healthy behaviour such as participating in physical activity. The study showed that the role of structure in facilitating physical activity participation starts in the family. Parents, siblings and cousins in the extended family can nurture healthy behaviour. The healthy behaviour then grows and improves as youth start to meet new friends at school and outside their home, and to communicate with them face to face in offline and online platforms. The study showed that the moderators continue to affect the healthy behaviour for youth to participate in physical activity based on the exchange of resources between them. Because the majority of youth aged 15 to 24 of both genders are still living with their families, they followed their families' rules and regulations in the house and obeyed family obligations and social commitments which sometimes prevented them from participating in physical activity freely. This meant family and friends are the highest moderators within youth structure for around ten years.

The use of structural theory in this study helped meet the objectives of the study and revealed new data. Although some of the data were limited due to a language barrier, it was very helpful in creating a larger image which explained how, despite their location, institutions in the structure cooperated, for example, to support a cause such as physical activity participation for Saudi youth through OSNs.

Arnaboldi, V., Guazzini, A., & Passarella, A. (2013) claimed the characteristics of OSN ego networks are not so different from those found in offline ego networks, both in terms of their structure and tie strength composition. They said this means that, even if OSNs like Facebook and Twitter give us many new and different ways to communicate, our social behaviour and our capacity to maintain social relationships with others seems to remain unaltered.

There appears to be a cognitive limit on the size of natural face-to-face social networks as Dunbar, 1993; Roberts et al., 2009; Sutcliffe et al., 2012 suggested. Yet, the role of exchange of recourses within youth networks showed that the size of youth social networks expanded from the offline to the online as they start to connect to people they know, in addition to the people they do not know in reality but heard about and wanted to know through OSNs.

Having larger networks, for these youth, means they will be exposed to larger influence, for example Roberts and Dunbar (2011) found that individuals who had larger social networks distributed their available social capital (as indexed by their self-reported emotional closeness) more thinly than those who had smaller networks.

Similarly, it was revealed in this study that facilitators who are the physical activity activists in OSNs distributed their healthy behaviour and influenced youth and the society in general through the emotional support and exchange of information. Previous research has shown that OSNs play an important role in the formation and maintenance of social capital (Ellison et al., 2007). This was confirmed in the study and continues as the facilitators gain their followers' trust based on the information they provide and exchanges, and this is considered one of the constraints to gain closeness in social networks. Emotional closeness, the intensity of relationships, which are based on trust, continue to be best indicators of tie strength (Arnaboldi, V., Guazzini, A., & Passarella, A. (2013). This is because trust is mainly formed and influenced by joint values, tasks and goals, by creating a collective identity and by physical proximity or emotional closeness (cf. Lewicki and Bunker 1995;

Ratnasingham 1999; Shapiro et al. 1992). Consequently, users actually tend to trust other community members with expertise, identity, personal information and some even with money lending (Lai and Turban 2008) and this was what the physical activity activist in OSNs share and exchange with youth; their real identity, and lifestyle. Not only did they gain trust, but they provide community support in OSNs and this as Sánchez-Franco, M. J., & Roldán, J. L. (2015) suggested that perceived community support fosters closeness, emotional bonds and mutual understanding among users despite the lack of face-to-face social interaction between members, who are essentially a group of strangers.

Meanwhile, according to Freeman (1979) a person located at the centre of a network has maximum possible degrees (number of contacts with others), falls in the geodesics (shortest possible paths) between the largest possible numbers of members, and is closest to all other members than any other member. Garton, Haythornthwaite, & Wellman (1997) argued it is important to examine centrality in a network and investigate who is central and who is isolated in a network. Years later, Ghosh and Lerman (2010) highlighted the importance of this characteristic and confirmed centrality turned out to be one of the best predictors of influence.

To define the central and isolate in a network, Garton, Haythornthwaite, and Wellman (1997) explained the manager who does not adopt email becomes an isolate in the email network while retaining a central role in the organizational network. Information exchanged via email will not reach this manager while information exchanged in face-to-face executive meetings will not reach lower-level workers. In a situation such as this, another person may play a broker role, bridging between the email network and the face-to-face executive network and conveying information from one network to the other (Freeman, 1979; Bonacich, 1987; Wasserman & Faust, 1994).

Though Ghosh and Lerman (2010) stated that data detailing the history of a dynamical process on a network is not available; therefore, calculating an empirical estimate of influence is not feasible. However, they argued many approaches were developed to identify important or influential actors solely using the structure of the network and they claimed their investigation is the first work which evaluates influence models based on the structural properties of complex networks using the actual underlying dynamics of the network.

Though Borgatti (2006) produced a comprehensive list of centrality indices, Freeman's (1979) key indices have remained robust for most of the applications and are still being used extensively.

According to Klein, Ahlf, and Sharma, (2015) scholars explored the development of alternatives to the structural centrality measures such as the 'network activity' of members. Two recent studies, that of Trusov et al., (2010) and Pagani et al,. (2011) have attempted to connect the network activity of members with structural centrality measures. The first uses the 'number of site logins over time of others based upon the site login of a user' as an indicator of influential activities of members and connects them with structural centrality. The second classifies activities on a social network site such as viewing and posting of opinions, questions, answers, photos, videos, personal information, and knowledge about an issue, and relates these activities to personality traits such as innovativeness and self, and social-identity expressiveness.

This study investigated the centrality characteristic through examining the highest interactivity between youth and physical activity activists in OSNs, and specifically through Twitter's hashtags, which are related to physical activity participation in Saudi Arabia. This enabled the researcher to deliver the most central physical activity activists in youth OSNs, and also examined the exchange of resources between them which revealed that exchanging information such as emotional support,

awareness on physical activity participation, health and fitness information was what attracted the majority of youth to these OSNs physical activity activists. These activists seem to fall under Freeman's definition of central (1979) as they are at the centre of a network (youth and their structures follow them), fall in the geodesics between the largest possible numbers of members (have the highest number of followers in the field of physical activity participation), and are closest to all other members than any other member (easy to reach and exchange information with). Hence, this study confirms the important role of examining central actors in the network to learn about the influence they create including increasing participation among youth in Saudi Arabia. The study also showed many isolates in the public sectors who still believe OSNs do not have an important role and are thus left behind and tend to miss the opportunity of exchanging information with youth, unless they are encouraged by their senior officials to join and to seek help from central actors who facilitate physical activity participation in OSNs. Some parents of older ages too, tend be in the isolates areas as they don't welcome the use of OSNs due to fear of new technologies or because they feel it's too complicated for them. Yet, I could argue that siblings and extended family members such as cousins tend to play the role of a broker to inform parents about their children's activities in OSNs, and about the opportunities and facilities available for youth to participate in physical activity.

7.4 Policy implications

According to World Health Organization (WHO) statistics on Saudi Arabia's youth health status and the increasing percentage of youth suffering from diabetes and being overweight due to inactivity, this study offers evidence on one of the methods that may help in decreasing this percentage. This study claims that communicating with youth and exchanging information with them through OSNs has a great impact. The study used mixed methods to understand the relationship between youth and the institutions providing opportunities for physical activity participation in the country and indicated that encouraging youth of both genders could be achieved through an online platform. The offline platforms remain important, especially for parents who have the first influence

over their children's healthy behaviour and who need to be more aware of the benefits of physical activity participation for men and women. The theoretical argument for this justification suggested the need for policy review within the public institutions such as the GAS, MOE, and media outlets due to their importance in providing legal and sustained regulated information, facilities and services in the country. These resources will enable more youth to participate in physical activity, especially women in the public schools.

7.5 Recommendations for future research

The debate on the role of self-efficacy theory or structural theory in understanding how OSNs facilitate physical activity participation among youth continues among researchers. Therefore, with the increasing number of health risks for youth, it is important to investigate further the role of structure, since they seem to complement each other. Understanding the lifestyle of youth in the Saudi context hence becomes important since youth constitute more than half of the population and are considered the future of the country. The health of youth is essential.

The role of PE supervisors is crucial, but their follow up with the implementation of the physical activity school strategy is inconsistent. Perhaps one could investigate what makes it hard for them to ensure the consistency of their work. Is it, as they mentioned, due to their limited number in Saudi Arabia compared to the number of schools? Is it due to PE teachers or perhaps to something else entirely? It would be also interesting to investigate the role of athletes and sportsmen who are already in OSNs but are not promoting physical activity participation. Finding role models in various physical activities who are willing to exchange information through the use online social networks to increase physical activity participation is a key factor to encourage youth and their parents and increase awareness in the culture. The strategy the few physical activity activists followed unintentionally as they began their journey and goal seems successful so far as it reached many youth and their names are now known more than any other Saudi national team athletes maybe, and it would be good to learn from their experience and implement it in other sports federations, or if such cooperation could exist

between both categories: online social networks physical activity activists, and physical activity decision makers who belong to governmental organisations such GAS, MOE, and MOH.

An additional recommendation would be to conduct a survey during one of the country's sporting events with reference to the value of athletes in society and to work from there onwards to address identified concerns and feedback. Further, now that many of the physical activity decision makers and senior officials are on Twitter, it would be interesting to see how they interact together and how officials from different ministries (such as the Ministry of Health, Ministry of Education, and the GPY) communicate, what topics they discuss with youth and how they respond to it together.

Therefore, the use of structural theory and digital ethnography is highly recommended for additional investigation in the field to allow for better understanding of these phenomena. Longitudinal studies are also encouraged to examine changes in the use of technology among youth, increased awareness among parents and institutions and the percentage of participation among youth.

7.6 Limitations of the study

The study faced a few limitations in theory and practice. First, in theory, it was hard to find studies on the role of both the offline and online social networks to understand, learn from and build on the role of all the structures in both platforms. It became necessary to go through the systematic reviews on the role of each structure separately and then synthesise the data. Second, it was also hard to find studies investigating the Arabic context, and specifically the Saudi context in the field of physical activity participation. Yet, the few studies available by Alhazza (1993, 2000, 2002) on children, adolescents and the NSSS national project helped in providing preliminary data to use and build on while investigating the objectives of the study and collecting data. Third, in practice, the biggest challenge was to find a way to analyse the OSN data taken from Twitter accounts and hashtags in Arabic, and this remains a problem. The only way to benefit from such important data was to go through each individual post manually to understand the overall exchange of resources.

Online surveys are good tools to enrich the qualitative data with quantitative and empirical evidence; however, surveying random people through an online survey includes the chances of having participants who are willing to participate whether they meet the requirements or not and the only way to validate is knowing the person to ensure he or she is suitable. That is why the study focused first on interviewing youth face-to-face and then used the additional online methods to support results and add to the investigation.

In addition, interviewing officials and decision makers or athletes for research purposes seems to take longer than interviewing them for newspapers, and it is advised to start such authorisation and approval processes in advance as much as possible, as this may take months to sort out.

7.7 Summary

Through using online social network structural theory adopted by Scott, Degenne and Forse, Stokowski, and developed by Giddens and Bordeaux, the research approach was to use mixed methods including 36 interviews, 110 online surveys, 26 sport federation websites, and analyses of 100 Twitter hashtags related to physical activities. The research participants included youth age 15-24 years old in Saudi Arabia, and the decision makers who promote and facilitate physical activities in the country including, family, school, friends, public and private organizations, and physical activity activists in OSNs.

The objectives of this study meanwhile was to: First, understand the relationships and exchanges taking place within young people's online networks that promote physical activity. Understanding the relationships between youth and their structures was delivered through the social network characteristics, which indicates that the strength and weakness of ties is based in the trustworthy feature for example. And due to youths' huge interest in online social networks and technology, communicating through this platform became most preferable over offline. And because part of the study objectives includes understanding this transformation, the theory helped again to show how it

happened quickly. This is because the ties were weak in the offline networks and sometimes not possible to create especially with public organization which used to prefer hierarchy and built bridges between them and their consumers before the growth of online social networks platform. Yet offline communication cannot be neglected completely, because some of the leading strong ties for youth are with their parents, cousins, friends, and PE teachers and youth tend to spend most of their time within these powerful structures. Strengthening such ties could be suggested as a study topic for the future since youth consider them trustworthy and spend most of their time with them.

Second, analyse patterns in the transformation of offline to online social networks through technology and their effects on physical activity participation. For example, focusing on the exchange of resources featured in both platforms indicated the lack and needs youth seek; and this was not mentioned in face-to-face interviews. I could argue here, when a topic is open for discussion in an online social network, and group of people interact, youth find themselves encouraged to join the discussion online with no limitation to what they could say as long as they do not cross any redlines. Additional example would be through using emotional support and emotional fear, which encouraged youth to participate in physical activity through using health factors, or religious verses to influence the participation. Though racism against female participation in Saudi was not discussed in the offline platform interview; it was revealed massively through the online platform.

Such elements thus helped show a new dimension to what youth require based on the analysis of the findings from the mixed methods used to collect data. The transformation of patterns from offline to online allowed easy access for youth who enjoy the development of technology to be able to receive news directly and ask about it through a two-way communication. Unlike the old way, where for example, flyers would be posted on a school board, or in a newspaper, which youth no longer have interest in reading. The proof of the success of such patterns is consequently visible through the increasing number of physical activities taking place in the country, and the increasing number of

youth joining to participate or support because of following a physical activity activist account in an online social network.

Third, examine how different structural factors and the patterns those factors create operate while influencing youth to participate in physical activity through offline social networks compared to OSNs. Structures were usually studied separately, yet they could be studied together as a whole to show complexity based on Stokowski, Degenne and Forse, Giddens, and Bourdieu's theory of social networks structures. For example, relying the investigation on youth interviews on its own was not going to show various roles structures have over individuals (youth) in influencing physical activity participation. These premises when investigated together in this research helped deliver the influence of different structures in different settings too (e.g., offline and online social networks). The setting where the study took place implies that we focus on the role of the structure. This is because of the kinship society nature where actions towards physical activity participation is not only relying on the individual self-efficacy, but also on his/her surroundings structures and what they offer, or not. The structure therefore, seems powerful, overrules, and weighs more than the agency when it comes to one's will to create a healthy behaviour for himself/herself. We cannot scale it of course, but the pressure and options the five structures investigated in this study put on one individual makes it hard for him/her to decide. This is noticeable for the 15 to 24 years old youth who are still under their parents' custody and guardianship, emotionally and financially.

The following main conclusions can be drawn from the theorization of physical activity. First, physical activity theories in the west have acknowledged the role of parents, and siblings yet the fact that extended family members could be as influential was not discussed. This study therefore, highlighted that role where cousins tend to be in a position between the siblings and friends and enjoy spending the time with their family, and introduce them to friends of friends thus increasing the networks. Second, the influence of the feminists theories is shown as Saudi females continues to fight inequality. In order

to do that, women tend to create networks to support each other in order to create radical change and grant their rights to participate in physical activity. Third, religion tends to be looked at as the agency and force behind Muslims actions and reactions; yet it was not examined by this way in this study. Trying to understand the role of religion is still difficult, however this study focused on understanding how a country ruled by religion facilitates the participation of physical activity among its youth of both genders, and how both genders comprehend it from their point of view and belief. This delivered an understanding of the strong role religion plays as encouraging for males, and discouraging for females. This is based on misinterpretations of Islamic teachings in the society, and low level of education, lack of awareness, and physical activity participation among parents.

Online social network structural theory therefore proved that the use of online social networks are influential in encouraging Saudi youth participation in physical activity and provided them with options such as acquiring information about physical activity and increased their awareness and shared their concerns, information about venues and facilities, and friends to practice with. Online social networks allowed bridging the gap for both the individual and the structure to reach each other at any time to exchange resources and ensure the sustainable communication between them continues to grow. The findings of this study proved too that though the number of physical activity activists who use online social network was small at the beginning of the data collection, by the end of the research the number was growing and alongside the interest from both individuals and structures including decision makers in the field of physical activity participation in Saudi.

In addition, in spite of the belief that technology and OSNs isolate youth from their families and waste their time, this study found that these tools and platforms are a crucial method of communication, if not one of the most effective. In this study, the physical activity activists proved their power in influencing healthy behaviour such as participation in physical activity. The activists

emphasised sustained and two-way communication, during which resources can be exchanged between youth and the physical activity participation facilitators in the country.

Based on the research question with regards to understanding OSNs and youth participation in physical activity, the three main objectives of this research were: understanding the relationship and exchange of resources between youth and their structure; understanding the patterns delivered from the transformation from offline SNs to online SNs; and understanding the different structural factors and their patterns operating within youth SNs. The researcher collected data through the use of mixed methods to understand youth social networks and how participants exchanged resources with the structures or moderators who had a role in increasing the participation of physical activity among youth.

The previous chapters introduced the literature that covered the area of physical activity participation, social networks and the transformation from the offline to OSNs as lifestyles changed in the country due to the role of technology and computer assisted communication.

Chapter Five explained the methodology of the research, the rationale behind choosing the identified method and the indicated participant pool for this research. The Findings chapter provided the results from the data collected and then it was discussed in the following chapter, Analysis and Discussion, based on the three structures investigated and then concluded with a comparison of all the findings.

After summarising the previous chapter and the main findings of this research, this section contains the discussion concerning the pattern of social networking between youth and decision makers who influence youth participation in physical activity. The mediators examined are parents (home), friends and school (MOE), sports clubs or gyms and sports federations (GAS), media, sports forums and OSNs.

Nevertheless, it is important to point out the gaps and absence of elements and characteristics in the data:

The empirical data also illustrated important elements, such as the role of religion as a means of driving the wheel of physical activity participation among youth and specifically women in Saudi Arabia. In addition, there was an investigation of how preaching about it during Friday prayer and investigating taking a negative attitude towards physical activity participation by the religious scholars can prevent many youth from communicating or following religious people in OSNs. When religious scholars change their views regarding female participation in physical activity due to a royal decree, the value of their judgments is hence questioned; therefore, they are not taken seriously in further decisions. This is apparent when most of the people that the youth tended to follow in Saudi Arabia were social activists or cultural figures that promoted themselves and communicated with the youth. The field of user experience online suggests that it is necessary to monitor the activity of a person and their comments by browsing to understand what the individual needs to be able to communicate with him or her on the same level. The religious group in this study seemed to follow a trend of sending messages with fear and punishments instead of attempting to convince readers.

According to the literature review discussed in Chapters Two and Three, investigating physical activity participation among Saudi youth results in some similarities and differences due to the role of culture, which influences the pattern of exchanging resources between the agent and the structure within youth social networks. The role of the structure, for example, implies that the relationship between youth and decision makers in physical activity participation follows a certain pattern.

In addition, based on the previous hypothesis, during the past ten years with the boom of technology and OSNs, youth in Saudi Arabia tend to control their free time after the age of 24, which is the estimated time when they get a job and are able to spend their money according to their own preferences. In addition, those who are over 35 seem to cause the most difference in OSNs, as most of them are either specialised in a field such as medicine or are owners of a fitness club or gym. Moreover, participants in this age group seemed to be interested in participating in various social activities to increase awareness.

In addition, a misconception still exists regarding the assumption that technology keeps youth busy and excessive use of it leads to being overweight or obese. In the long and short online survey, only a few respondents mentioned the use of OSNs leading to increased awareness with regard to physical activity participation. Parents tended to believe their children were occupied using technological gadgets and that such use wastes their time. Moreover, while collecting data, a lecturer in one of Saudi Arabia's universities suggested that I focus this study toward distracting youth from using technology to communicate and instead on directing them to turn to old practices and traditional games.

Using emotions, such as fear of negative health consequences, tended to encourage youth to participate in physical activity and encouraged their parents to motivate their children as well, according to more than one of the physical activity OSN activists.

Decision makers were not concerned with feedback from youth, except on three occasions, namely when the NSSS conducted its project and interviewed youth; when the previous prince, Nawaf ibn Faisal, replied via Twitter to his fans and youth; and when OSN activists started promoting their fields of interest. Even then, the concerns were never followed up with the youth. Feedback was generally elicited only one time whenever there was a goal to reach. The only segment that seemed open for follow up with regard to increasing participation in physical activity was the latter one in which four to five people believed that the role of online social networking supported increased popularity and trust from their followers, such as Rayan Karkadan, Obai Albashir, and Dr. Salih Alansari. Their comments and replies seemed to offer knowledge that benefits their followers in addition to promoting their fields of interest.

The exchange of resources could be divided into the following themes: information, facilities and emotional support. These three themes seem to occur for four reasons: lack of information, facilities and emotional support. In addition, communicating through OSNs bridged the gap between officials and youth and allowed youth to express their concerns via different forums such as writing or

posting a photo or video. The exchange of resources between these two segments is no longer limited and restricted.

To make such exchanges of resources happen through an OSN, some used their influence, such as the MOE, to gather information from youth, while others used religion, such as parents, when they order their children to walk to the mosque or to pray. Others such as OSN activists used negative emotional messages targeting the individual's health to instil fear to get them to move and become physically active. In addition, this segment also shared their daily physical active lifestyle to motivate others to join and participate.

Reasons for participating in physical activity included that it was one of the few options of entertainment or because peers were doing it. For women, it was related to becoming part of an elite group because opportunities for physical activity can be expensive, and not many families can afford to send their daughters to participate at a gym. It also has become an indication that the family was open minded and happy to support their daughter to play in a field that has been known for a very long time to be dominated by men.

Reasons for not participating included the following: lack of facilities such as known venues and transportation, the lack of finances to pay for the expense of participating in a gym and the lack of role models for both genders who stand out and share their experiences openly (both positive and negative).

After conducting the study, it seemed youth aged 15 to 24 were not interested in communicating with decision makers. They preferred their small known networks. They may have liked or retweeted but did not comment online. Those who challenged the activists in OSNs were generally over 24 years old.

OSNs make it easy for women to seek professional advice from professional people regarding physical activity participation, but the majority who lose weight did not do so to stay fit. It was easy for them to contact men.

The increasing interest in cycling was found to be easy to practice by many Saudi as a result of the country's climate.

The Ministry of Health held a contest for the best project in support of physical activity and health, which was also practiced by the Saudi NOC secretary general and spread within Saudi cities with many societies launching their activities through OSNs. This happened within a year of a small group starting in Jeddah and then expanded to the other cities to include both Saudis and non-Saudis. It is easy to join them, as there is no need for subscription because it is open for all; however, the majority are over 20.

It is important to understand that part of a participant's decision to go out and get physically active is controlled by the parents in Saudi society. As long as the youth is in his or her parent's custody, he or she remains under their control. Some families allow room for freedom, but the majority continue to maintain their control. Their control sometimes continues due to strong personalities or using emotional fear of disobeying the parent, which is something religion forbids.. The role of the family and their power in making a decision on behalf of youth, especially women, lasts until around the age of 24 depending on whether they got married and left home earlier. Otherwise, their parents control their free time. Family obligation tends to be the first option when they have free time, especially if there is a transportation problem, and it is not easy to go out.

Families with working mothers tended to understand the importance of their children going out and participating in physical activity more than housewives. Fathers who already enjoyed and were consistent in physical activity participation became role models for their children of both genders. Many women who had fathers that were professional athletes grew up with an interest in physical activity participation.

Those who were brought up abroad seem to have become influenced by foreign culture, and even those who were sent to boarding or summer schools grew to have similar interests regarding

participation in physical activity. Some of those who returned to Saudi Arabia introduced new sports, such as hockey, American football and skiing. They formed groups and have kept on playing.

An additional influence was from foreigners living in the country; for example, individuals from the Philippines started playing basketball and have their own leagues in Saudi districts. It has become one of the strongest games and Saudis enjoyed it. Indians and Pakistanis have introduced cricket. Several places are still known to offer such games. Saudis who are half Saudi and half foreign sometimes send their children to learn, watch, and participate.

Regarding the positive and negative implications of social network analysis, many indicated the negatives of using technology; for example, a doctor in a public university in Saudi suggested that I use the research to advise youth to turn away from using technology while the majority of people commented negatively. Parents also preferred that their children not use computer-mediated communication and talk more with them.

Some activists advised that the best time to spread messages was in the evening when Twitter was busy with people of all ages; in Saudi culture, this is a time when even employees are free and relaxed at home. I was advised to use this timeframe during the distribution of the online survey.

Distributing the survey was more successful through OSNs than through organisations (its power was not good enough). For example, the GAS sent the survey via fax to its federations; however, it worked better through people who knew people through OSNs. Such participants mentioned that it was given to them through a famous online activist, such as Yaser, who had many followers.

After the analysis, the most influential category seems to be the youth over 24 who had a medical background and were on OSNs, providing their lifestyle and daily routine to the public. Additionally, they were involved in social work and responded to other people's inquiries. Showing the religious side seemed to be a bonus and helped in attracting a larger number of religious youth as well. It became evident that knowledge, religion, and being an expert in CMC were the key elements

to influence and increase youth participation in physical activity. They also tend to ask their followers what they needed in order to address those needs. For example, "Does anyone need a workshop to help with organising their physical activity weekly schedule, and what type of physical activity is preferred? Many people were commenting yes; women wanted something suitable indoors, especially those who are not able to go out and join a gym. Proper knowledge in the field seemed to provide credibility to the person.

7.8 Note for future expectations on Saudi youth physical activity participation

During the period of this study, Saudi Arabia experienced the death of late King Abdullah and the appointment of the new Custodian of the Two Holy Mosques, King Salman Al Saud, in addition to the ministerial changes through a short period of time. These events have resulted in changes to many of the strategies and plans that the county used to follow. With respect to the previous strategies, and the new ones the inconsistency may tend to deliver inconsistent results. However, the new government is in favour of the use of computer-assisted communication, as was seen through the launch of the new account for the new King Salman as soon as he entered office in February 2015. It seems such use had to be implemented in the hierarchy from top to bottom to ensure its application, as was the case with Prince Nawwaf ibn Faisal, who became active and encouraged the employees in his ministry to follow him and create their own accounts. In addition, when the new king was appointed, he changed many ministers including the Minister of Education and combined both the ministries of education and higher education under one ministry. Meanwhile, the king himself launched an account on Twitter as soon as he was appointed, and hence followed the other ministers and many officials under each ministry. The GAS minister Abdullah ibn Mosaad (538,000 as of February 2015) and education minister Azzam AlDakhil (645,000 as of February 2015) were already active on Twitter with a large number of followers. If governmental and religious leaders are in OSNs, this may mean there will be more communication between the ministries and cooperation, as they can support each other through retweeting each other's social causes, for example. Youth activities for both sexes are becoming more

visible in the country for both sexes with the respect of the cultural segregation tradition. The door is opening wide now for new challenges and opportunities for females. This is finally happening and officially after the appointment of Princess Reema, Vice President of Women's Affairs at the General Authority for Sports (GAS) to head female sports in the country and her cooperation and dedication to flourish the field for females to participate and increase their awareness in physical activities. It is not only expected that female sports will witness success in the country, but also male sports thanks to the newly inaugurated elite sports programme and vision in March 2017. The vision includes building four new Olympic stadiums, cooperation between the Ministry of Education and other sectors to benefit sports development in the country, delivering gold medals in future Asian Games, and striking triumph in the 2022 Tokyo Olympics based on GAS President Prince Abdullah ibn Musaed.

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Appendices

Appendix

A: Copy of the letter of approval to participate in the research from the ethics committee at Brunel University

Head of School of Sport & Education
Professor Susan Capel

Brunel UNIVERSITY LONDON

Heinz Wolff Building,
Brunel University, Uxbridge,
Middlesex, UB8 3PH, UK
Tel +44 (0)1895 266494
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Razan Baker
Flat 23A Kings Gardens
West End Lane
West Hampstead
London NW6 4PU

24th April 2013

Dear Razan

RE10-11 Studying the role of internet-assisted communication tools (social networks and virtual world) in promoting the participation of physical activity among Saudi youths aged 15-24

I am writing to confirm the Research Ethics Committee of the School of Sport and Education received your application connected to the above mentioned research study. Your application has been independently reviewed to ensure it complies with the University/School Research Ethics requirements and guidelines.

The Chair, acting under delegated authority, is satisfied with the decision reached by the independent reviewers and is pleased to confirm there is no objection on ethical grounds to grant ethics approval to the proposed study.

Any changes to the protocol contained within your application and any unforeseen ethical issues which arise during the conduct of your study must be notified to the Research Ethics Committee for review.

On behalf of the Research Ethics Committee for the School of Sport and Education, I wish you every success with your study.

Yours sincerely

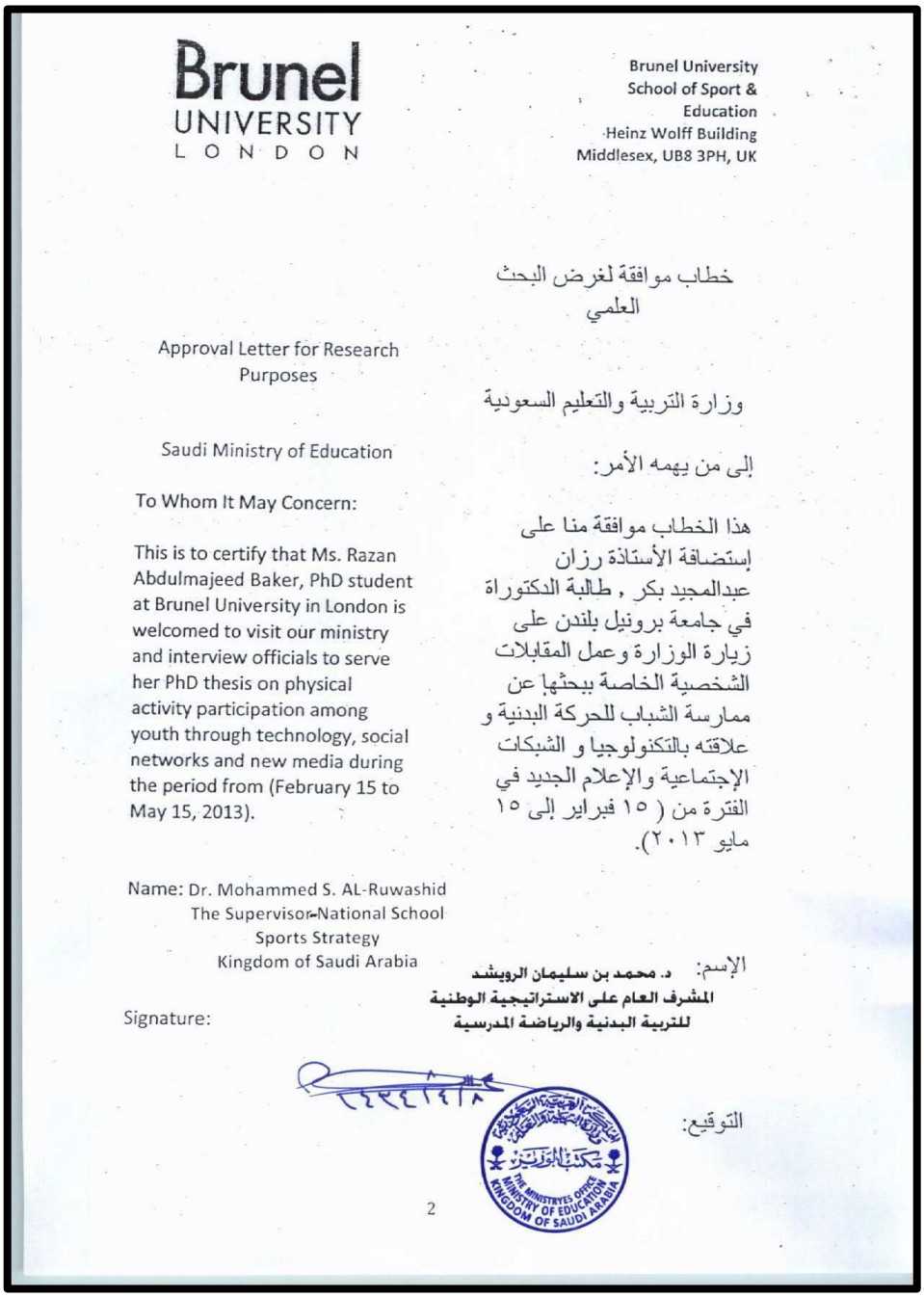
Dr Richard J Godfrey
Chair of Research Ethics Committee
School Of Sport and Education

Team Korea

Canadian Paralympic Committee | Comité paralympique canadien

The Queen's Anniversary Prizes for Higher and Further Education 2011

Appendix B: Copy of the letter of approval to conduct research at the Ministry of Education



Brunel UNIVERSITY LONDON

Brunel University
School of Sport & Education
Heinz Wolff Building
Middlesex, UB8 3PH, UK

خطاب موافقة لغرض البحث العلمي

Approval Letter for Research Purposes

وزارة التربية والتعليم السعودية

Saudi Ministry of Education

إلى من يهمه الأمر:

To Whom It May Concern:

هذا الخطاب موافقة منا على إستضافة الأستاذة رزان عبدالمجيد بكر , طالبة الدكتوراة في جامعة برونيل بلندن على زيارة الوزارة وعمل المقابلات الشخصية الخاصة ببحثها عن ممارسة الشباب للحركة البدنية و علاقته بالتكنولوجيا و الشبكات الإجتماعية والإعلام الجديد في الفترة من (١٥ فبراير إلى ١٥ مايو ٢٠١٣).

This is to certify that Ms. Razan Abdulmajeed Baker, PhD student at Brunel University in London is welcomed to visit our ministry and interview officials to serve her PhD thesis on physical activity participation among youth through technology, social networks and new media during the period from (February 15 to May 15, 2013).

Name: Dr. Mohammed S. AL-Ruwashid
The Supervisor-National School Sports Strategy
Kingdom of Saudi Arabia

الإسم: د. محمد بن سليمان الرويشد
المشرف العام على الاستراتيجية الوطنية للتربية البدنية والرياضة المدرسية

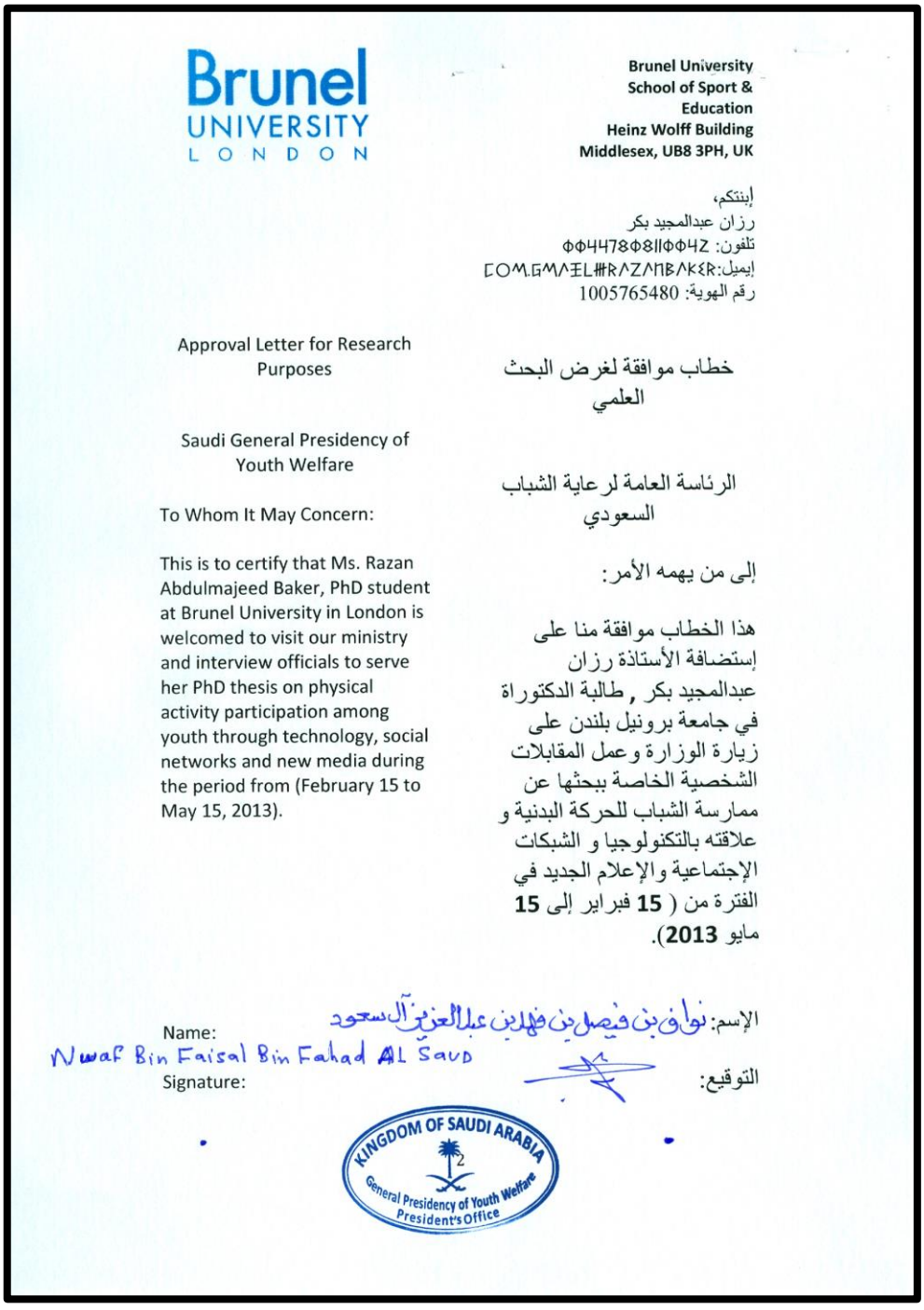
Signature:

التوقيع:

مكتب الوزير
THE MINISTRYES OFFICE
MINISTRY OF EDUCATION
KINGDOM OF SAUDI ARABIA

2

Appendix C: Copy of the letter of approval to conduct research at the GAS



Brunel UNIVERSITY LONDON

Brunel University
School of Sport & Education
Heinz Wolff Building
Middlesex, UB8 3PH, UK

إبنتكم،
رزان عبدالمجيد بكر
تلفون: ΦΦ44784Φ8ΙΙΦΦ4Z
إيميل: ΓΟΜ.ΓΜΛ王L#ΡΛZΛΠΒΛΚ£Ρ
رقم الهوية: 1005765480

Approval Letter for Research Purposes

خطاب موافقة لغرض البحث العلمي

Saudi General Presidency of Youth Welfare

الرئاسة العامة لرعاية الشباب السعودي

To Whom It May Concern:

إلى من يهمه الأمر:

This is to certify that Ms. Razan Abdulmajeed Baker, PhD student at Brunel University in London is welcomed to visit our ministry and interview officials to serve her PhD thesis on physical activity participation among youth through technology, social networks and new media during the period from (February 15 to May 15, 2013).

هذا الخطاب موافقة منا على إستضافة الأستاذة رزان عبدالمجيد بكر , طالبة الدكتوراة في جامعة برونيل بلندن على زيارة الوزارة وعمل المقابلات الشخصية الخاصة ببحثها عن ممارسة الشباب للحركة البدنية و علاقته بالتكنولوجيا و الشبكات الإجتماعية والإعلام الجديد في الفترة من (**15** فبراير إلى **15** مايو **2013**).

Name: نواف بن فيصل بن فهد بن عبدالعزيز آل سعود
Nwaf Bin Faisal Bin Fahad AL Saud

الإسم:

Signature:

التوقيع:

KINGDOM OF SAUDI ARABIA
General Presidency of Youth Welfare
President's Office

Appendix D: Copy of the semi-structured interviews with decision makers

	Questions
1	From your point of view, What is the best way to increase physical activity participation among youth in Saudi Arabia?
2	What is your strategy in communicating with youth and the organisations such as the Ministry of Education, GAS, or ministry of health to increase participate in physical activity?
3	From your point of view, can you describe the role the ministries play to increase participation in physical activity?
4	How do you use technology and computer mediated communication to reach youth through your organisation? And what are the main concerns you receive from youth?
5	Do you have any rules and regulations with regards to communicating with youth?
6	Can you describe the role of your media/PR office at your organisation?
7	From your point of view, what preventing youth from participating in physical activity?
8	What is the role of religion from your point of view in increasing participation in physical activity?

Appendix E: Copy of the short survey

	Question
1	What is your age? (15-24) What is your sex? (Female/male) Which province in Saudi Arabia do you present? (Northern, Southern, Easter, Western, or Middle) What is your school type? (Public, Private, or International School) Do you participate in physical activity? (Yes/no) What are your top three most practiced physical activities? (List three please)
2	From your point of view, what is the best way to increase youth participation in physical activity?
3	Please rank the following according based on (1 most influential – 5 less influential): Myself – Father –Mother – Siblings – Cousins – Friends – Friend from opposite sex – Neighbors – Teacher – Coach at fitness center/sport club – People you know briefly in OSNs – People you know briefly in sports websites – Famous sports personalities you interacted with through OSNs – Media people you interacted with through OSNs, No one.
	1. With who do you usually prefer to participate in PA with?
	2. If you wanted to speak about a personal problem facing you, who do you usually prefer to speak to?
	3. If you wanted to take an advice on your health and fitness, who would you prefer to speak to?
	4. Who encouraged you to participate in physical activity for the first time?
	5. With who do you usually prefer to spend your free time with?
	6. Who encouraged you to participate in online social networks for the first time?
	7. Who usually encourage you to watch sports in the stadium or TV?
	8. With who do you usually speak to the most in online social networks?
	9. From your point of view, who is the reason behind the physical inactivity among youth?
	10. From your point of view who is the best to encourage physical activity participation among youth?
	11. If you received an invitation to participate in physical activity, whose invitation would you accept first?
	12. Who from the following list you prefer to follow up with their updates in online social networks?

	13. Who are the majority of the people you follow and interact with in online social networks?
	14. From the following list, whom do you communicate with the most through your Whatsapp?
	15. Who are the people you interact with the most through your smartphones?

Appendix F: Table showing the thematic analysis of the data based on the role of the structures and what they provide

*PA: physical activities, OSNs: Online social networks, PE: Physical education, MOE: Ministry of Education, GAS: General Authority of Sports, MCIT: Ministry of Communications and Information Technology

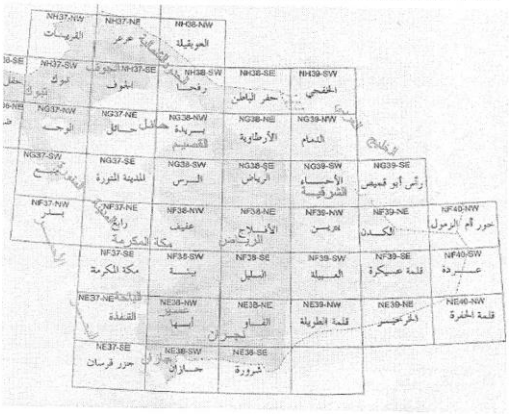
Themes	Description	Examples
Family	Parents, father, mother, sister, brother, uncles, aunties, cousin, extended families.	Drive to school, drive to mosque, parents pay for PA clubs, educated parents supports their kids, physically active parents supports their kids and introduce them to PA, over protective families
Ministry of Education (MOE)	School, PE teacher, PE class, PE curricula, school PA, after school physical activity.	Providing venues, introducing different PAs, school tournament, after school PAs, collaboration with family, collaboration with PA decision makers, PE teacher influence, family attend school tournament, safe environment, learn about PA, increase awareness, lack of support for females, lack of PE teacher value
General Authority of Sports (GAS)	Sports federations, sports clubs, sports venues, sports tournaments, sports competitions, athletes, Olympics, (and the list of various sports e.g. football, basketball…etc.), federation websites	Provide sports venues, organize sports competitions, support athletes and amateurs, support males, lack of support for females, active federations in OSNs, active officials in OSNs, coordination and controlled sports
Friends	School friends, neighbourhood friends, online social networks friends, and friends.	Go to the gym together, rent football field together, participate in PA in school, follow each other in online social networks, encourage each other to try ne PA, support each other to continue participation in PA
Physical activity activists in OSNs	OSNs activists, physical activity activists, physical activity, sports, health and fitness, Saudi youth, participation.	Increase awareness, provide information, encourage attendance in stadiums
Sports Media	Sports media, censorship, redline, taboo, women rights, women participation, Olympics, walking, diving, cycling, online social networks, campaign, awareness, information, racism, Ministry of Communications and Information Technology (MCIT)	Increase awareness, provide information, encourage attendance in stadiums, sports racism, lack of Pro athletes value
Religion	Islam, religion, religious practices, physical activity and Islam, sports	Religious police prohibit females participation, religion support PA for

	and Islam, Muslim females participation, religious police, extreme religious, General Presidency of the *Promotion of Virtue* and the Prevention of Vices, Qura'an, mosque	both sexes, misinterpretations of Islam and PA participation
Municipal authorities	Municipality, authority, prohibit random activities, they offered the sidewalks and physical activity services, sidewalks and parks	Building PA venues for the public, prohibiting informal and sanctioned activities, lack of support, lack of cooperation, enhancing public venues infrastructure, creating areas for public PA

Appendix G: Sample selection from the National Sports Strategy findings

This appendix contains sample selections of the National School Sports Strategy (NSSS) findings from the research they conducted with parents, physical education teachers, physical education supervisors, principals, and 380 students. The interviews were conducted face-to-face and were transcribed, and translated from Arabic to English. The data provided here were used as background and supporting material during the analysis. (MOE, 2011)

Kingdom of Saudi Arabia: 13 Administrative Regions – 45 Educational District Offices



The education system began in Saudi Arabia in the 1930s. By 1951, the country had 226 schools with 29,887 students. The MoE was established in 1954. Today there are 5.94 million students enrolled into the KSA education system in separate male and female student schools, served by 425,343 teachers (210,187 male and 215,156 female) at all types of schools from K1 to K12. The Kingdom has over 32,000 schools with a high proportion of small schools and –approximately 30% of total schools are located temporarily in rented villa accommodation.

The public education system provides:

- Free education for all children Saudis & non-Saudis, textbooks, and health services.
- K-12 schools (6-years Elementary, 3-years Intermediate, and 3-years Secondary/high).

National School Sports Strategy, Kingdom of Saudi Arabia
Local Analysis. 1. Introduction

- Gender parity throughout the system. Boys and girls have the same basic subjects except for **physical education**.
- Extracurricular activities: girls in secondary schools choose to participate in textile/ fashion design or domestics skills, while boys have a choice between business development and vocational training. In elementary and intermediate schools, girls take household economics, domestic skills or fashion design instead of physical education.
- Teaching time of 6 to 7 sessions a day with two 15 minute breaks. Education sessions are occasionally taken outside classrooms in designated labs and studios.
- A school day that starts at 7:00am and ends at 1:00pm, with the exception of first 3 years of Elementary school which end at 12:00 noon.

وزارة التربية والتعليم
Ministry of Education

With a **total population of 38.4% of the population under 18 years old**[2], Saudi Arabia faces a major challenge in educating their youth. Large amounts of children are entering in a system which guarantees education to everyone. Below is the data that defines the size of the K-12 education system:

- **Primary education**. Children start the first grade of primary education at the age of 6. All national primary schools are day schools and not co-educational. In order to move on to intermediate education, children have to pass the examination at the end of Grade 6 of primary school and obtain the Elementary Education Certificate. There are 2,513,815 students (1,273,119 male and 1,240,696 female) in primary education and 228,325 teachers[3]. Gross enrolment data was 98.1%[4].
- **Intermediate education**. 1,198,414 students (636,693 male and 561,721 female) were in intermediate education and the number of teachers was 122,480 (62,306 male and 60,174 female).Gross enrolment was 95.9%[5].
- **Secondary education**. The final stage of general education lasts three years. After the intermediate education, students have the opportunity to receive

[2] Source: UNICEF 2010
[3] Source: Ministry of Education 2010
[4] Source: UNESCO 2007

general and specialized secondary education. Technical secondary institute which provide technical and vocational education and training programs lasts three years in the fields of industry, commerce and agriculture. 1,125,602 students (625,365 male and 500,237 female) are in secondary education and the number of teachers totals 102,416 (49,654 male and 52,762 female). Gross enrolment was 91.8%[6].

The following table summarizes key data in relation to the educational system.

	Primary	Intermediate	Secondary	Total
Number of students by level (boys)	1,273,119	639,693	625,365	8,121
	50%	25%	25%	100%
Average of students in PE class	19	24	26	22
Number of PE teachers*	3,979	2,111	1,705	7,796
	51%	27%	22%	100%
Number of PE supervisors**	-	-	-	219
Number of schools	6,393	2,091	1,031	9,515
	67%	22%	11%	100%
Number of PE class per week	2-3***	2	1	-
Ratio PE teacher/Number students	1/320	1/302	1/367	1/312
Ratio PE teacher/School	0.6/1	1.0/1	1.6/1	0.8/1
Ratio PE supervisor/School	-	-	-	0.02/1
Ratio PE supervisor/PE teacher	-	-	-	0.03/1
Ratio PE supervisor/Number Schools	-	-	-	1/43

*Special needs PE teachers are not included.
**PE supervisors are not educational-level specific; they are assigned to schools with no consideration of students' levels.
** Primary level 1-3 3 class/week and primary level 4-6 2 class/week.

	Governmental	Rented	Other
Ownership of buildings	61%	35%	4%

	Bachelor degree	Teacher institutions	Diploma
Ownership of buildings	60%	26%	13%

[6] Source: UNESCO 2007

1.3 Challenges and expectations on the strategy

Saudi Arabia population is facing an increasing problem of obesity and illnesses associated to it. Today, and according to recent researches, Saudi Arabia ranks the 3rd country with the largest rate of adult obese population.

OVERWEIGHT*[7]	
School pop.	Adult pop.
33.9%	69.0%

OBESITY[8]	
School pop.	Adult pop.
15.8%	22.1%

DIABETES[9]	
School pop.	Adult pop.
28.0%	25.0%

SPORT PARTICIPATION	
School pop.	Adult pop.
15.8%	N/A

*Includes obesity

Despite there are not studies known about the index of sports participation in adult population in the Kingdom, adopting an active lifestyle from youth it becomes indispensable to guarantee lifelong healthier habits.

The national school sports strategy is expected to consider this problem in the formulation of proposals. Changing such indicators requires a change in social habits and, as any human behaviour, it will require committed support in long term sustainable actions. Quality physical education needs to be understood as the first step towards this aim. Analyzing in depth the point of view of different stakeholders of the education system, the educational community do not yet consider Physical Education as important as other scientific or language subjects. Parents and community in general are increasingly more aware of the benefits of physical activity associated to physical and mental health but there is no evidence that this has lead to an increase of participation levels. Adopting a more active lifestyle requires changing daily habits and, as any social change, that needs time. The link between health and education is already present in the National Education Strategy developed which is at this time being prepared for its implementation. The **education strategy** is a new vision and planning system for a promising future of the next generations. The education strategy incorporates the following contents referred to physical activity.

[7] Source: WHO 2010.
[8] Source: Nephrology Dialysis Transplantation, Volume 16, Issue 11, 2001. Oxford Univ. Press.
[9] Source: International Diabetes Federation, www.idf.org, http://www.aleqt.com/2010/04/17/article_380204.html, http://www.alriyadh.com/2011/06/29/article645949.html *visited on February 8th 2012.*

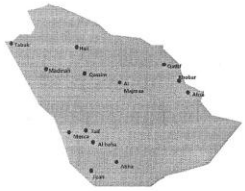
The sports activities developed in Youth Sports Centers have a lack of annual planning activities according to specific contents and goals. Moreover, there is not a process of monitoring done by a PE supervisor. Hence, there is no process to ensure the quality of sports activities.

Sports Cities

Sports Cities are macro sports complex build and managed by General Presidency of Youth Welfare (GPYW). In theory, these sports complex where designed for elite sports. Neverthless, in some cases the MoE use these sports complexes to develop StS activities (trainings and championships) for talented students through an agreemnt with GPYW.

The current number of Sports Cities is 13 and they are allocated around the country. These are the Sports Cities in KSA:

- King Abdulaziz Sports City in Mecca
- King Faisal Bin Abdulaziz Sports City in Jizan
- King Saud Bin Abdulaziz Sports City in Al-Bahah
- King Khaled Bin Abdulaziz Sports Cities in Tabuk
- King Fahad Bin Abdulaziz Sports City in At-Ta'if
- Prince Abdullah Bin Abdulaziz Sports City in Al-Qassim
- Prince Sultan Bin Abdulaziz Sports City in Abha
- Prince Mohamed Bin Abdulaziz Sports City in Medinnah
- Prince Nayef Bin Abdulaziz Sports City in Al-Qattif
- Prince Salman Bin Abdulaziz Sports City in Al-Majma'ah
- Prince Abdullah Bin Gloy Sports City in Al-Ehsaa
- Prince Abdulaziz Bin Mesaaed Bin Gloy Sports City in Ha'il
- Prince Saud Bin Gloy Sports City in Al-Khobar



Summary of KSA Physical Education curriculum

1. Framework

The Physical Education (P.E.) curriculum in Saudi Arabia is the new creation. Now all the schools in the kingdom had at their disposal the P.E. study guides to develop the new P.E. curriculum.

The following summary shows the key contents of PE curriculum. In each documents we choose the ideas or highlight important content and come to conclusions that will be useful for future strategy.

We are in crucial moment, the Ministry of Education is developing a new curriculum; are the teacher ready to implement this curriculum? Are the contents adapted to the students need? And more questions that the strategy has to reply. First of all, we need to know the contents of P.E. curriculum.

2. Antecedents

There has been a process promoted by the Ministry of Education to create curriculum PE in order to improve the current state of P.E. classes. The process started with the publication of a road map of Physical Education (2002), which is implemented through the different guides for teachers for all three-education levels.

National School Sports Strategy
KSA School Sport System

Sports Federations

The Kingdom's 29 sports federations, which are supervised by the GPYW, organize leagues and tournaments for athletes to sharpen their skills.

LIST OF SPORTS FEDERATIONS			
1	SAUDI ARIABIA FOOTBALL FEDERATION	16	SAUDI ARABIA MOTOR RACING FEDERATION
2	SAUDI ARABIA ATHLETICS FEDERATION	17	SAUDI ARABIA PIGEON HOME FEDERATION
3	SAUDI ARABIA BASKETBALL FEDERATION	18	SAUDI ARABIA LIFTING & BODY BUILDING FEDERATION
4	SAUDI ARABIA VOLLEYBALL FEDERATION	19	SAUDI ARABIA SHOOTIN & ARROWS FEDERATION
5	SAUDI ARABIA HANDBALL FEDERATION	20	SAUDI ARABIA PHYSICAL EDUCATIONS FEDERATION
6	SAUDI ARABIA HORSES FEDERATION	21	SAUDI ARABIA TABLE TENNIS FEDERATION
7	SAUDI ARABIA DEAF SPORTS FEDERATION	22	SAUDI ARABIA HEALTH SPORTS FEDERATION
8	SAUDI ARABIA BOWLING FEDERATION	23	SAUDI ARABIA SEA SPORTS FEDERATION
9	SAUDI ARABIA SNOOKERS FEDERATION	24	SAUDI ARABIA SPORTS FOR ALL FEDERATION
10	SAUDI ARABIA BILLIARDS & SNOOKERS FEDERATION	25	SAUDI ARABIA GYMNASTICS FEDERATION
11	SAUDI ARABIA CYCLING FEDERATION	26	SAUDI ARABIA KARATE FEDERATION
12	SAUDI ARABIA FENCING FEDERATION	27	SAUDI ARABIA JUDO & TAEKWONDOO FEDERATION
13	SAUDI ARABIA TENNIS FEDERATION	28	SAUDI ARABIA BOXING & WRESTLING FEDERATION
14	SAUDI ARABIA SQUASH FEDERATION	29	SAUDI ARABIA SPORT FACILITIES FEDERATION
15	SAUDI ARABIA GOLF FEDERATION		

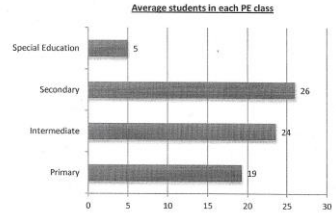
National School Sports Strategy
KSA School Sport System

2. ACTIVITIES

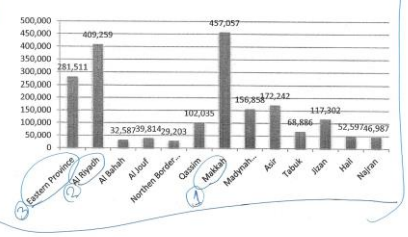
2.1. PHYISCAL EDUCATION

2.1.1 PE Data

Average students in each PE class



Number of PE students per region



IMPORTANCE INDEX MEASURED

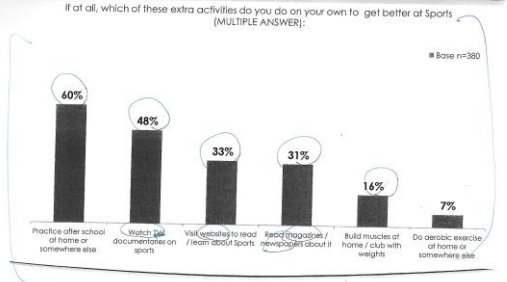
Assuming you were going to pursue a career in Sports: maybe as a professional Athlete or Coach/ Instructor/ Teacher.

How important would each of these reasons be in getting you to decide to go towards this career in Sports:

Extremely Important	Important	Neither Nor	Unimportant	Extremely Unimportant
100	75	50	25	0

INDIVIDUALLY NO SERIOUS EFFORTS FOR SELF-IMPROVEMENT ON SPORTS

If at all, which of these extra activities do you do on your own to get better at Sports (MULTIPLE ANSWER):



RECAP

Saudi Students Are Hungry For More Sports:
No Barriers Voiced Except For School Sports System & Infrastructure

And Are Highly Optimistic That In The Future
Their Country Can Do Very Well In Sports Globally

They Hope They Be Part of It When They Grow Up:
With The Majority Wishing This Could Be Their Career

But Ironically Are Not Aware Sports That Can In Reality Be A "Career"
Thinking That It's Only For The Few, Parents Wouldn't Allow It, etc.

Schools Are Playing A Small Role In Encouraging Sports –
PE in School is Fun & Interactive but SS after school is not (If available at all)

↓

SO WHAT IS SPORTS IN THE MINDS OF THE STUDENTS?

Appendix H: This appendix displays the National School Sports Strategy (NSSS) plan. (MOE, 2011)

Appendix I: Ranking of structures in the youth answers to the online short survey with 110 participants

Question	Answer (Number of respective responses)
Q1. With whom do you usually prefer to participate in physical activity with?	A1. Friends (37), myself (29), no one (14), siblings (9), cousins (7).
Q2. If you wanted to speak about a personal problem facing you, whom do you usually prefer to speak to? Q3. If you wanted to obtain advice on your health and fitness, whom would you prefer to speak to?	A2. Friends (24), mothers & siblings (19), friend from opposite sex (12), myself (7), fathers (6). A3. Coach at fitness club (36), sports celebrities in online social networks (16), friends (11), myself & mothers (8), people you know briefly in sports websites (7).
Q4. Who encouraged you to participate in physical activity for the first time?	A4. Myself (54), friends & fathers (12), mothers (11), siblings (9), friends from opposite sex & cousins (5).
Q5. With whom do you usually prefer to spend your free time with?	A5. Friends (46), mothers (16), siblings (13), myself & cousins (12), friend from opposite sex & no one (10).
Q6. Who encouraged you to participate in online social networks for the first time?	A6. Myself (61), friends (21), siblings (8), mothers (5), cousins (4).
Q7. Who usually encourages you to watch sports in the stadium or on TV?	A7. Myself (41), friends (27), fathers (11), siblings (10), no one (14).
Q8. With whom do you usually speak the most in online social networks?	A8. Friends (55), friends from opposite sex (13), cousins & people you know briefly from online social networks (9), siblings (5), mothers (4).
Q9. From your point of view, who is behind the physical inactivity among youth?	A9. Myself (24), fathers (23), mothers (17), cousins (11), siblings & friends (9).
Q10. From your point of view, who is the best to encourage physical activity participation among youth?	A10. Myself (34), friends (28), fathers & coach at fitness club (19), mothers (10), sportsmen & celebrities in online social networks (9).
Q11. If you received an invitation to participate in physical activity, whose invitation would you accept first?	A11. Friends (35), mothers (17), siblings (12), myself & fathers (9), sportsmen in online social networks & cousins & friend from opposite sex (8).
Q12. Whom from the following list would you prefer to follow up with their updates in online social networks?	A12. Friends (38), people you know briefly in online social networks (11), sportsmen in online social networks (13), friend from opposite sex & no one (8), media men in online social networks (6).

Q13. Who are the majority of the people you follow and interact with in online social networks?	A13. Friends (54), cousins (14), siblings (11), opposite sex (9), sportsmen in online social networks (7).
Q14. From the following list, whom do you communicate with the most through your WhatsApp?	A14. Friends (52), cousins (15), siblings (14), friend from opposite sex & mothers (9), fathers (3).
Q15. Who are the people you interact with the most through your smartphone?	A15. Friends (32), mothers (25), fathers & friend from opposite sex (12), siblings & cousins (10), no one (8).

Appendix J: Frequency with which Saudi students grade10-12 do certain activities (data extracted from the MOE's NSSS project)

How often do you...?	Socialise with friends	Read the Qura'an	Read newspapers	Read magazines	Read books	Sports/ exercise	Watch TV	Eat out
Every 1-2 days	41%	23%	11%	1%	1%	34%	97%	17%
Every 3-6 days	41%	97%	24%	3%	3%	42%	14%	29%
Once/Week	16%	29%	9%	3%	7%	16%	1%	25%
Every 2-3 weeks	1%	10%	7%	7%	10%	5%	0%	21%
Once/Month or less	0%	6%	10%	14%	15%	1%	0%	5%
Never	1%	5%	97%	97%	97%	3%	2%	3%

Appendix K: The GAS sports federations' websites activity status 2012-2014

	Federation	Website Link	Status - 2010	Status - 2012	Status - 2014
1	Paralympic Committee for Special Needs	www.sns.org.sa	Active	Active	Active
2	Saudi Arabian Athletic Federation	www.saaaf.com	Active	Active	Active
3	Saudi Arabian Anti-Doping Committee	www.saadc.org	Active	Active	Active
4	Saudi Arabian Basketball Federation	http://sabfed.com/soon/	Under construction	Under construction	Under construction
5	Saudi Arabian Billiard & Snooker Federation	Facebook Page	Not Available	Not Available	Active
6	Saudi Arabian Boxing and Wrestling Federation	Facebook Page	Not Available	Not Available	Active
7	Saudi Arabian Bowling Federation	www.sbf.org.sa	Active	Active	Inactive
8	Saudi Arabian Cycling Federation	Not Available	Not Available	Not Available	Not available
9	Saudi Arabian Deaf Federation	www.deafsp-sa.com	Active	Active	Not available
10	Saudi Arabian Equestrian Federation	www.saef.gov.sa	Active	Active	Active
11	Saudi Arabian Fencing Federation	www.sa-fancing.com	Inactive	Inactive	Inactive
12	Arab Saudi Football Federation	http://www.thesaff.com.sa/	Not available	Not available	Active
13	Saudi Arabian Gymnastics Federation	http://www.saudigym.gov.sa/	Under construction	Under construction	Active
14	Saudi Arabian Golf Federation	http://www.ksagolf.com/	Not available	Not available	Active - English Version Only
15	Saudi Arabian Handball Federation	http://sahf.org.sa/	Under construction	Under construction	Active
	Saudi Arabian Homing Pigeon Racing	www.saudipigeonracing.net	Active	Active	Not available

16	Federation				
17	Saudi Arabian Judo and Taekwondu Federation	www.ksajtf.org.sa	Active	Active	Not available
18	Saudi Arabian Karate Federation	www.skaf.org.sa	Inactive	Inactive	Active
19	Saudi Arabian Motor Federation	www.samf.gov.sa	Active	Active	Active
20	Saudi Arabian National Olympic Committee	www.saudiolympic.org.sa	Inactive	Inactive	Active
21	Saudi Arabian Physical Education & Sports Federation	www.spsf.org.sa	Active	Active	Active
22	Saudi Arabian Maritime Sports Federation	http://www.samsf.net/index.php?option=com_content&view=article&id=46&Itemid=54&lang=ar	Inactive	Inactive	Active
23	Saudi Arabian Shooting & Archery Federation	http://www.sasaaf.com/	Under construction	Under construction	Closed - Limited Access
24	Saudi Arabian Sports Medicine Association	www.sasma.org.sa	Active	Active	Active
25	Saudi Arabian Sports for All Federation	www.ssff.gov.sa	Inactive	Inactive	Active
26	Saudi Arabian Squash Federation	http://www.saudisq.com/mag/index.php	Active	Active	Active
27	Saudi Arabian Swimming Federation	http://sasfjobs.com/	Not available	Not available	Active
28	Saudi Arabian Table-Tennis Federation	http://www.ttfksa.com/	Inactive	Inactive	Active
29	Saudi Arabian Tennis Federation	www.sauditenfed.gov.sa	Active	Active	Active
30	Saudi Arabian Volleyball Federation	http://www.saudivb.org/	Inactive	Inactive	Active
31	Saudi Arabian Weightlifting & Bodybuilding Federation	www.sawbf.com	Inactive	Inactive	Not available

Appendix L: The 100 hashtags investigated due to their relation to physical activity in Saudi Arabia

No.	Most interactive hashtags	Meaning	Hashtag category	Main nature of the timeline attitude	Promoting physical activity participation	Type of exchange of resource	Creator	Creator's title as presented in Twitter	Sex/ Institution	Date	Time	Location
1	#RZH	The account user name abbreviation and Health	PA - Women	Positive	Yes	Information - PA	@divelopnl	None	F	14-Jun-10	7:32 am	Netherlands
2	دلما ملحس	Dalma Malhas female equestrian	PA - Women	Positive & Negative	No	Information - Pro sports	@alwasatnews	Al-Wasat Newspaper - Kingdom of Bahrain	I	20-Aug-10	10:32 am	Bahrain
3	#ميزان	Mizan (Scale and in this hashtag they refer to healthy lifestyle)	Health - Information/facilities support	Positive	Yes	Information & Facilities	@amirakary	Persian account	M	22-Feb-11	11:18 am	None

4	#Saudi #women #sports	Saudi women sports	PA - Women	Positive	Yes	Information	@khaledhishma	International relations, activism, writing	M	29-Jun-11	1:55 pm	Jordan
5	#الدوري_السعودي	Saudi League	PA - Football	Positive & Negative	No	Information	@iW4el	Loves writing, and interested in technology and app technical issues	M	12-Oct-11	12:38 am	Middle Province
6	#التطعيس	dune bashing	PA - Extreme Sports	Negative	No	Information & Venues	@Nabeel_Hajiya	None	M	29-Oct-11	7:24 pm	Kuwait
7	#وليد الفراج	Waleed Alfarraj - TV presenter	PA - Football	Positive & Negative	No	Information	@marzoq7	Ittifaq fan	M	15-Nov-11	2:44 am	Middle Province
8	#تحسين_بيئة_الملاعب	Enhancing stadiums facilities	PA - Facilities	Positive & Negative	No	Information & Venues	@aljabarty	Journalist	M	25-Nov-11	1:48 pm	Saudi
9	#السعودية المشي_للصحة#	Walking for health	PA - Walking	Positive	Yes	Information & Venues	@SalihAlansari	PA activist	M	01-Mar-12	10:00 pm	Middle Province
10	#برنامج_كورة	Football Program	PA - Football	Positive & Negative	No	Information	@BaderAlHamad5	Photographer, Media bachelor	M	01-Mar-12	8:41 pm	Middle Province
11	#اكشن_يا_دوري	Sports Programme League Action	PA - Media	Positive & Negative	No	Information - Pro sports	@FahadAlZidane	None	M	02-Mar-12	8:05 pm	None

12	#يزيد_الراجحي	Yazeed Alrajhi (Saudi Rally driver & business man)	PA - Extreme Sports	Positive	Yes	Information - facilities & services - financial support	@NeYo0o	Saudi lawyer and photographer in Paris	F	02-Mar-12	11:26 pm	Saudi in Paris
13	# التعصب_الرياضي	Sport racism	PA - Racism	Positive & Negative	No	Information	@khafooq	None	M	08-Mar-12	10:53 pm	Western Province
14	#وقت_اللياقة	Fitness Time Gym	PA - Facilities & Venues	Positive	Yes	Information	@sfkh_	None	M	09-Mar-12	7:24 pm	Saudi
15	#رالي_حائل	Hail city rally	PA - Extreme Sports	Positive	No	Information & Venues	@alhatme1432	fan from hail	M	18-Mar-12	3:22 pm	Hail Province
16	#أولمبياد_حشمة	Decent Olympics	Olympics - Religion	Negative	No	Information - Lack of support for women	@Rami__Ak	An amateur artist, a psychiatry resident, a serious gamer and a sportaholic #Aries #Atletista #AupaAtleti #SkynyrdNation	M	19-Mar-12	6:42 pm	Middle Province
17	# ممشى_الملك_عبدالله	King Abdullah walking area	PA - Walking	Positive	Yes	Information & Venues	@Adel_Alamer	Civil Engineer	M	20-Mar-12	11:19 am	Middle Province

18	#اولمبياد_لندن	London Olympics	Olympics	Positive & Negative	No	Information - Pro sports - Major events	@fno0_	None	F	03-Apr-12	5:08 pm	Saudi
19	# اليوم_العالمي_لل صحة	World health day	Health - World Day	Positive	No	Information	@Amal_Alsaeed	Business Administration BA	F	04-Apr-12	3:07 pm	Saudi
20	#ماراثون_جدة	Jeddah Marathon	PA - Marathon	Positive	Yes	Information - PA	@liedoz	Lecturer at the Islamic University in AlMadinah	M	04-Apr-12	4:19 pm	Western Province
21	#أكشن_يادوري	League Action - TV sport program	PA - Football	Positive & Negative	No	Information	@Nada901	Ittihad fan	F	20-Apr-12	9:01 pm	Middle Province
22	# دوري_المحترفي ن_السعودي	Saudi Pro League	PA - Football	Positive & Negative	No	Information	@Abdullah13999	None	M	28-Apr-12	10:15 am	Alqasim Province
23	# الاتحاد_السعود ي_لكرة_القدم	Saudi Football Federation	PA - Football	Positive & Negative	No	Information	@MalekKhalid	None	M	01-May-12	9:07 pm	Middle Province
24	# نواف_مع_الشبا ب	Nawaf with youth	PA - GAS - Pro Sports	Positive	No	Information - Pro sports	@Saudbinmohmed	None	M	13-May-12	7:56 pm	Middle Province
25	# أكاديمية_الاهلي	Alahli football academy	PA - Football	Positive	No	Information	@imohaamed	New Media	M	17-May-12	7:04 pm	Middle Province
26	#تعزيز_الصحة	Enhancing health	PA - Health &	Positive	Yes	Information - facilities	@Moha6mmed	None	M	11-Jun-	5:36 am	Saudi

			fitness			& services				12		
27	# سارة_عطار # وجدان_شهرخاني	Sarah Attar - Wijdan Shaharkhani	PA - Women	Negative	No	Information - Lack of support for women	@SkyNews Arabia_S	Media - TV Channel	I	12-Jul-12	5:33 pm	Middle Province
28	#لندن_٢٠١٢	London 2012	Olympics	Positive & Negative	No	Information - Pro sports - Major events	@almazail_ryan	Alhilal fan	M	29-Jul-12	9:29 pm	Middle Province
29	#جولد_جيم	Gold Gym	PA - Facilities & Venues	Positive	Yes	Information	@D7MY_2	Fashion freak, loves art	M	30-Jul-12	2:21 am	Western Province
30	# دوري_كأس_الأمير_فيصل_بن_فهد	Prince Faisal ibn Fahd Cup League	PA - Football	Positive & Negative	No	Information	@sopr_sport	Sports News group online	I	05-Aug-12	8:44 pm	Saudi
31	# ماذا_تعلمت_من الأولمبياد_	What have I learned from the Olympics	Olympics	Positive & Negative	No	Information - Pro sports - Major events	@Saraa2019	Hilal fan	F	10-Aug-12	12:56 am	Middle Province
32	# دوري_أبطال_آسيا	Asian Champion League	PA - Pro Sport	Positive & Negative	No	Information - Pro sports - Major events	@ElyasDrini	and Ittihad club fan	M	15-Aug-12	1:29 am	Western Province
33	#تركي_العجمة	Turki Alajmah - TV sport presenter	PA - Football	Positive & Negative	No	Information	@bezoo19	Alahli fan	M	30-Aug-12	10:05 pm	Western Province
34	#اكاديمية_نور	Noor Football	PA-Football	Positive	No	Information	@shbkhnet	Media network	I	31-Aug-	1:31 pm	Saudi

		Academy								12		
35	#كرة_قدم السعودية#	Football, Saudi	PA - Football	Positive & Negative	No	Information	@78e8ahFootBall	From the stadium	I	03-Sep-12	7:56 pm	Saudi
36	#المشي_فجرا	Walking in the morning Saudi	PA - Walking	Positive	Yes	Information - PA	@SalihAlansari	PA activist	M	18-Sep-12	3:14 am	Middle Province
37	# لا_لرياضة_البنات	no for female sports	PA - Women	Negative	No	Information - Lack of support for women	@shinryoma	None	M	07-Oct-12	7:51 pm	None
38	# دخول_النساء_للملاعب	Women entering stadiums	PA - Women	Negative	No	Information - Women lack of support	@ma_alsharif	None	F	12-Nov-12	5:46 pm	Western Province
39	# ادعموا_الأخضر	Support the green (NOC) team	Supporting national teams	Positive	No	Information - Pro sports	@almdrrj	Saudi Electronic sport magazine	M	14-Nov-12	1:10 am	Saudi
40	# دوري_عبداللطيف_جميل	Abdulatif Jameel Football league	PA - Pro Sport	Positive & Negative	No	Information - Pro sports - Major events	@mohamad__	Engineer	M	14-Nov-12	4:04 pm	Saudi
41	#المنشطات السعودية#	Doping Saudi	PA - Doping	Positive & Negative	No	Information	@alswidi1030	Najd Newspaper Chairman	M	20-Nov-12	5:14 pm	Middle Province
42	#السعودية # الرياضة_المدرسية	Saudi School Sport	PA in schools	Positive & Negative	Yes	Information - PA	@t_q35	Alnasr club fan	M	19-Dec-12	4:59 am	Middle Province

43	# كلنا_معاك_باالأ خضر	we are all with you green	PA - Pro Sport	Positive	No	Information - Pro sports	@ahmd14151	None	M	03-Jan-13	4:30 am	None
44	#تحدي_90_يوم	90 days challenge	PA - Health & fitness	Positive	Yes	Information	@ahmad1hamzi	None	M	07-Jan-13	9:17 pm	Western Province
45	#ممشى_التحلية	Altahlia walking area	PA - Walking	Positive	Yes	Information -Venues	@Qutaiba_Muslim	None	M	12-Jan-13	6:31 pm	Western Province
46	# البرامج_الرياضي ه	sport programs	PA - Media	Positive & Negative	No	Information - Pro sports	@yazn9090	None	F	14-Jan-13	7:41 am	Saudi
47	# رابطة_غواصي جدة_	Jeddah Divers union	PA - Diving	Positive	Yes	Information - PA - Venues	@mailali1	Divers	M	17-Jan-13	5:07 am	Western Province
48	#دبابات_بحرية	Jet ski	PA - Extreme Sports	Positive	Yes	Information	@iM0ony	Nasr fan	F	19-Jan-13	6:22 pm	Middle Province
49	# دراجتي_الريا ض	My bicycle Riyadh	PA - cycling	Positive	Yes	Information - facilities & services	@khalid_nad	None	M	20-Jan-13	12:18 pm	Eastern Province
50	# رياضه_السيارا ت #السعوديه	Car sports, Saudi	PA - Extreme Sports	Positive	Yes	Information -Venues	@MotorsportNSA	Online car sport news account	I	03-Feb-13	6:00 pm	Saudi
51	# دراجتي_الشرقية	My bicycle, Eastern Province	PA - Cycling	Positive	Yes	Information	@SaudiMuslim2	Employee and administrator at the cycling group	M	15-Feb-13	4:57 pm	Eastern Province

52	#مية_يوم	100 days (a challenge to loose weight	PA - Health & fitness	Positive	Yes	Information	@F2NalMu Faireej	Social consultant and MA student at Imam university	F	17-Feb-13	7:26 am	Middle Province
53	# دراجتي السعودية#	my bicycle Saudi	PA - Cycling	Positive	Yes	Information - PA	@Bin_Jarboa	None	M	14-Mar-13	10:48 pm	Saudi
54	#الأندية_النسائية	Women Clubs	PA - Women	Positive & Negative	Yes	Information & Venues	@AAldaw	None	M	30-Mar-13	1:18 pm	Middle Province
55	#جدة_سايكلست	Jeddah cyclist	PA - Cycling	Positive	Yes	Information - PA	@HallabMedhat	Co-Founder & Executive President of @jeddahcyclists Co-Founder of @TripolieclubStrong	M	30-Mar-13	6:01 pm	Western Province
56	# الإعلام_الرياضي	sports media	PA - Media	Negative	No	Information - Pro sports	@marathonJed	Marathon official account	I	08-Apr-13	4:45 pm	Western Province
57	# مجموعة_دراجتي	My bicycle group	PA - Cycling	Positive	Yes	Information - PA - Venues	@MaxAlOmair	Cycling fan	M	08-Apr-13	11:54 pm	Saudi
58	# عرب_دايت رياضة#	Arab Diet, Sports	PA - Health & fitness	Positive	Yes	Information	@HealthyMan0	Trying to make sports and my nutrition lifestyle	M	28-Apr-13	4:12 pm	Saudi
59	# السعودية شغب_الملاعب#	Stadiums ciaos	PA - Facilities - Stadiums	Negative	No	Information - Women lack of support	@albayrag_	Social and cultural newspaper in Saudi Arabia	M	27-May-13	9:20 pm	Saudi

60	#الأكل_القمامي	junk food	PA - Health & Nutrition	Positive	Yes	Information - PA	@MGBakri	A certified Design Thinker facilitator from IDEO & ExperiencePoint |Community Solutions Designer | Partner @yig_community | Founder @Qomami |	M	08-Jun-13	10:57 am	Western Province
61	# السكري_صحصد حله	Wake up for Diabetes	Health - Diabetes	Positive	Yes	Information	@mimadani	A Muslim, a Son, a husband & father of 3, a Saudi business owner. An optimist that enjoys pessimistic sarcasim. Local issues & trends, Arsenal and Survivor.	M	09-Jun-13	8:44 am	Western Province
62	# تصريح_رياضي تاريخي_	Historical sport release	PA - Media	Positive & Negative	No	Information	@the__taha	Youth from Libya	M	15-Sep-13	5:33 am	Libya
63	# تطوير_الرياضة	developing sports	PA - School	Positive &	Yes	Information - PA -	@988_adel	None	M	18-Sep-	8:42 pm	Eastern

	المدرسية_	school	Sports	Negative		Venues				13		Province
64	#صحتي_في_رياضتي	My health in my sports	PA - Health & fitness	Positive	Yes	Information	@amjad_d9	None	F	26-Nov-13	11:08 am	Saudi
65	#jeddahunited #women	#jeddahunited #women	PA - Women - Basketball	Positive	Yes	Information - PA - Women	@JeddahUnited	Academy supporting sports for young and youth in Jeddah both sexes	I	18-Dec-13	11:54 am	Western Province
66	#دراجتي_السعودية	my bicycle Saudi	PA - cycling	Positive	Yes	Information - facilities & services	@z3bdulla	None	M	26-Jan-14	8:42 pm	Western Province
67	#خلي_روحك_رياضية	Have a sporty spirit	PA - Racism	Positive	No	Information - Pro sports	@RotanaFMKSA	Media - Radio	I	30-Jan-14	5:23 pm	Middle Province
68	#أوقفوا_التعصب الرياضي_	Stop sport racism	PA - Racism	Positive & Negative	No	Information	@A_Alqahtani11	None	M	01-Feb-14	3:31 pm	Middle Province
69	#التطعيس السعودية#	dune bashing Saudi	PA - Extreme Sports	Positive & Negative	No	Information & Venues	@ray2011an	None	M	13-Feb-14	9:16 am	Saudi
70	#جائزة_الصحة	Health award	Health - Award	Positive	Yes	Information - facilities & services - financial support	@Emanool	Senior medical student @KAU	F	18-Feb-14	11:23 am	Western Province
71	#زومبا #جده	Zomba Jeddah	PA - Women - Zomba	Positive	Yes	Information - PA - Women	@iUnique70	None	F	25-Mar-14	12:50 pm	Middle Province

72	#إضافة_مادة_البدنية_للبنات_بالمدارس	Adding PE in women's schools	PE in women's Schools	Negative	No	Information - Lack of support for women	@hnoo94_	Nasr fan & financial management undergrad	F	06-Apr-14	12:08 am	Middle Province
73	#هل_تتزوج_فتاه_مارست_الرياضه	Would you marry a girl who plays sports	PA - Women	Negative	No	Information - Lack of support for women	@Rayedrd	None	M	09-Apr-14	7:06 am	Saudi
74	#11 استاد_رياضي	11 sport stadiums	PA - Facilities - Stadiums	Positive	No	Information & Venues	@style_saudi	None	M	21-Jun-14	1:40 pm	Alqasim Province
75	#شكراً_للملك_على_إنشاء_11_ملعب	Thanks to the king for inaugurating 11 stadiums	PA - Facilities - Stadiums	Positive	No	Information & Venues	@Hafez_Al Medlej	Sport writer and lecturer at the business administration at Imam uni	M	21-Jun-14	2:07 pm	Middle Province
76	#برنامج_المدن_الصحية	Healthy cities program	Health - Programme	Positive	Yes	Information	@HcpKsa	National health awareness project	I	22-Jul-14	9:19 am	Middle Province
77	#اهم_ثلاث_شخصيات_رياضيه_برايك_	The top three important sport personalities in your opinion	PA - Football	Positive	No	Information - Survey	@a7md_q15	Ahli fan	M	02-Aug-14	6:47 am	Western Province
78	#رياضي_قديم	Old sportsma	PA - Pro Sport	Positive	No	Information	@moaj1995	None	M	15-Aug-	8:41 am	Iraq

		n								14		
79	#الكتاب_الرياضيين	Sport writers	Media - writers	Negative	No	Information	@moh1234549	Hilal fan	M	21-Aug-14	3:52 pm	Middle Province
80	#نريد_مبتعثين_رياضيين	We want sportsmen sent abroad for training	PA - Pro Sport	Positive	No	Information	@hukusfof	They seek abandoned rights for the Saudis	I	13-Oct-14	3:44 pm	Saudi
81	#عايض_القرني_تشجيع_سيدني_يخالف_العقيدة	Ayed Algarni (religious scholar) supporting Sydney contradict religion	PA - Religion	Negative	No	Information	@Retage324	None	F	30-Oct-14	11:51 pm	Western Province
82	#فتاه_تدخل_ملعب_الجوهره	A female in Aljohra stadium	PA - Women	Negative	No	Information - Lack of support for women	@anooch_hfc	Hilal club fan	F	12-Dec-14	8:18 pm	Middle Province
83	#أندية_الأحياء	Districts clubs	PA - Facilities	Positive & Negative	Yes	Information & Venues	@alseddeqclub	Districts club belongs supervised by NSSS and present Alahsaa city in the eastern Province	I	14-Dec-14	4:43 pm	Eastern Province
84	#فرقنا_ما_تفرقنا	Dive us, you will not	PA - Racism	Positive	No	Information	@o7no7n	Ahli fan	M	29-Dec-	7:13 am	Western Provi

		divide us								14		nce
85	# بطولة_الأمير_نايف_للقفز_المظلي	Prince Naif championship for skydiving	PA - Extreme Sports	Positive	No	Information	@A_ALAZZAM	Interested in traveling and tourism, created a hashtag one hundred day and lost 50 kilos	M	11-Jan-15	10:40 am	Middle Province
86	# الوعي_الرياضي	sports awareness	PA - Media	Positive	Yes	Information	@kwais0	Ahli club fan	M	25-Feb-15	8:36 pm	Western Province
87	# التوحدي_كمان_دراج	Autistics are cyclist too	PA - Special Needs	Positive	Yes	Information	@JeddahAutism	Jeddah society for autism	I	28-Mar-15	7:45 pm	Western Province
88	يوغا #جدة#	Yoga Jeddah	PA - Women - Yoga	Positive	Yes	Information - PA - Women	@KadiRamadi	Children publishing house in Jeddah	I	17-May-15	9:14 am	Western Province
89	# سرقة_دراجات_جدة	Stealing Jeddah bicycles	PA - cycling	Negative	No	Information	@CAPTAINGHASSAN	Weekly columnist and writer	M	03-Apr-15	6:27 pm	Western Province
90	# ندوة_النشاط_البدني	Physical activity lecture	PA - Health & fitness	Positive	Yes	Information	@drosamahn	Assistant Prof. at Mass Communications Dept. King Saud University, Journalist	M	06-Apr-15	8:53 am	Middle Province
91	# السوبر_السعودي_في_لندن	Saudi super league in London	PA - Pro Sport	Positive & Negative	No	Information & Venues	@jamul_3	None	M	28-Jun-15	10:55 pm	Middle Province

92	#فضيحه_السوبر_في_لندن_	Saudi super league in London scandal	PA - Pro Sport - Women	Negative	No	Information - Lack of support for women	@rbaawe520	None	M	12-Aug-15	12:59 am	Western Province
93	#سباق_بوبا	Bupa race	PA - Marathon	Positive	Yes	Information	@BupaArabia	Health Insurance company	I	16-Sep-15	4:01 am	Western Province
94	#٢٠ك_مشي_في_وادي_حنيفة_	Walking 20K in Wadi Hanifa	PA - Walking	Positive	Yes	Information - PA - Venues	@smartcoach7	Coach in Karate & fitness	M	19-Sep-15	7:18 pm	Middle Province
95	#هايكنج_السعودية	Hiking in Saudi	PA - Hiking	Positive	Yes	Information - PA	@smartcoach7	Coach in Karate & fitness	M	19-Sep-15	7:18 pm	Middle Province
96	#معرض_الرياضة_واللياقة_السعودي	Saudi sports and fitness exhibition	PA - Ehibition	Positive	Yes	Information	@isfsaudi	The exhibition official account	I	12-Nov-15	9:28 am	Saudi
97	#مشاة_الرياض	Riyadh walkers	PA - Walking	Positive	Yes	Information - Venues	@SalihAlansari	PA activist, Family doctor and creator of enhancing health hashtag and walking for health hashtag	M	27-Nov-15	8:43 am	Middle Province
98	#ايقاف_محمد_نور_بسبب_المنشطات	Banning Mohammed Noor for	PA - Doping	Positive & Negative	No	Information	@_lasma27	None	F	29-Nov-15	11:50 pm	Saudi

		doping										
99	# براءة_محمد_نور_من_المنشطات	Banning Mohammed Noor for doping	PA - Doping	Positive	No	Information - Pro sports	@mh2148	Hilal (rival team) fan	M	29-Nov-15	11:29 pm	Middle Province
100	# استبيان_التعصب_الرياضي	Sport racism survey	PA - Racism	Positive	No	Information - Pro sports	@AlsheikhSultan	President of the 1st sport entertainment company	M	04-Dec-15	8:29 am	Saudi

Appendix M: Map of Saudi Arabia showing the distribution and number of clubs in each province in 2012/2013 provided by the GAS

Appendix N: NSSS results on students' preferences and time spent participating in physical activities and the venue preferred

How often?	In school	In the streets/ alleys	Community centres	Empty lands	In clubs	With other schools/ clubs	At home
Every 1-2 days	15%	26%	1%	10%	6%	1%	10%
Every 3-6 days	37%	46%	2%	25%	8%	4%	19%
Once/Week	47%	14%	3%	24%	3%	5%	8%
Every 2-3 weeks	1%	4%	3%	7%	1%	8%	8%
Once/Month or less	0%	3%	5%	4%	7%	20%	6%
Never	0%	8%	86%	30%	76%	61%	50%

Appendix O: Distribution of Saudi women in public and private schools in Saudi Arabia (Ministry of Education statistics, 2012/2013)

The table below was used to investigate the number of Saudi women who had been introduced to physical activity through private schools.

Distribution of Saudi women in public and private schools in Saudi Arabia	Public intermediate schools	Public high schools	Public universities	Total in public schools	Private intermediate schools	Private high schools	Private universities	Total in private schools
Saudi women	33%	25%	34%	92% (923,636 women)	2%	4%	2%	8% (94,726 women)